MILITARY TRUCKS
ARCHIVE

DIAMOND T MODELS 980, 981

BRITAIN'S SECOND-GENERATION TANK TRANSPORTER

MORE THAN 180 RARE IMAGES

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MILITARY TRUCKS ARCHIVE

CONTENTS

DIAMOND T MODELS 980,981

● The Diamond T – this example is the Model 980 – was developed for use as a tank transporter, a task at which it excelled. But, Pickfords were quick to realise its potential for shifting other heavy and indivisible loads and, once Hitler had been dealt with, other heavy-haulage companies were similarly persuaded. This example, now wearing a DVLA 'age-related plates', probably spent more years working with John C Simmons heavy haulage than it spent in uniform.

Compiled and written by Pat Ware with source material from the Warehouse Archive, Phil Moth, Lieutenant-Colonel (retired) Richard Grevatte-Ball, and Simon Thomson.

This book is dedicated to John Wynn (1932-2020), a life-long fan of the Diamond T and a man I was proud to call a friend

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INTRODUCTION

The Diamond T Models 980, 981... the best-looking truck of WW2!

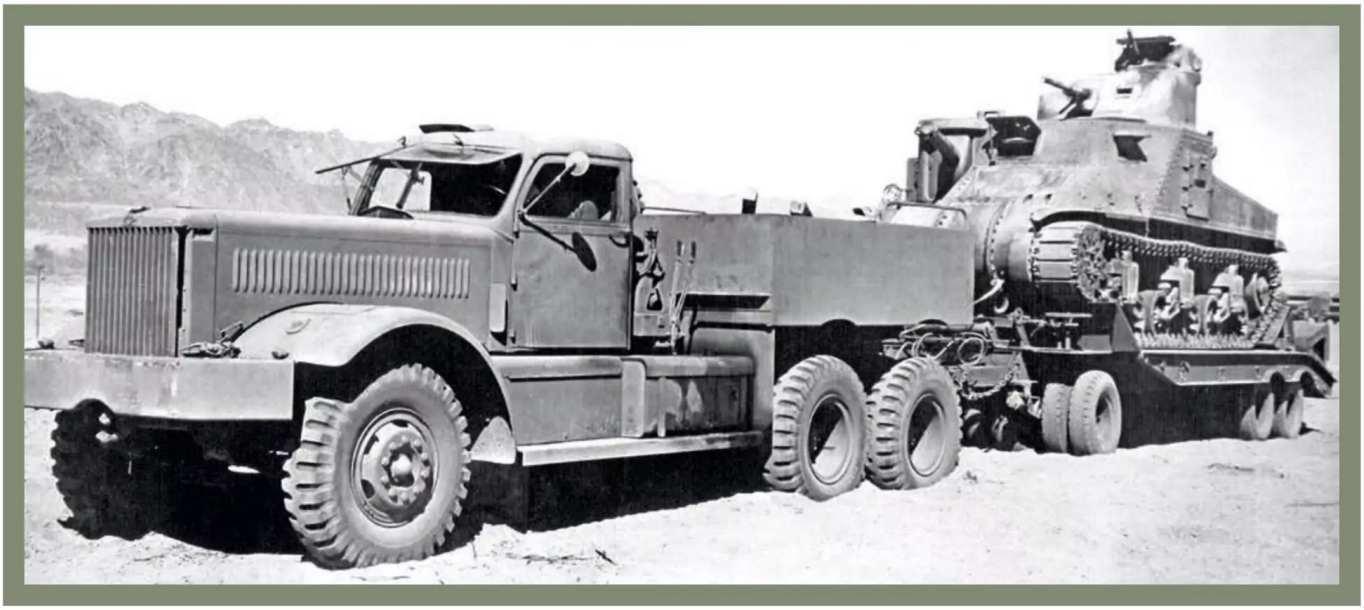
The Diamond T tank transporter owes its existence to several, largely unrelated factors. Firstly, during the mid-thirties the British War Office failed to recognise that tank transporters might just come in useful in the event of another war. A lone Scammell Pioneer had been acquired in 1932, but it wasn't until 1937 that the first contract was placed for a handful of 20-ton transporters. Unfortunately, a lack of sufficient production facilities at Scammell's Watford plant meant that the vehicle was always going to be in short supply. And, as if that wasn't bad enough, almost all of the British Expeditionary Force's vehicles and equipment were abandoned in France in May 1940... resulting in an even greater shortage! But, perhaps more telling, tanks seemed to be getting bigger and heavier and even uprating the old Pioneer from 20 to 30 tons was not going to be enough!

Clearly, the British Army needed a new tank transporter and, just as clearly, it was not going to be a Scammell.

In an attempt at addressing a serious shortage of heavy vehicles, and particularly tank transporters, the British Purchasing Commission in the USA asked several manufacturers of heavy trucks – including Mack, FWD, Ward LaFrance, Diamond T, and White – to investigate the possibility of developing and producing a heavy tractor that could supplement the meagre numbers of Scammell Pioneer tank transporters. The result was the Diamond T Model 980, a handsome 40-ton prime mover with an outrageous art-deco styled cab, and a long, long coffin nose housing a massive Hercules diesel engine.

● Resplendent in a coat of matt paint with a faint disruptive camouflage pattern, the Diamond T Model 980 poses for its first official portrait, showing-off its brutish, but undeniably handsome, lines. Approved for towing the largest tanks of the period, it is a world away from the archaic Scammell Pioneer which it rapidly displaced.

● In what would appear to be a reversal of the normal scheme of things, an armoured recovery vehicle (ARV), consisting of a turretless M3 Grant medium tank with cleated tracks, demonstrates its towing prowess. The Diamond T is hitched to a 40-ton trailer on which has been loaded a 40-ton (40.7 tonne) Churchill tank... giving a combined weight of more than 90 tons (91.6 tonne)!



● Closed-cab Model 980 possibly struggling against loose sand. The trailer is the US-pattern 45-ton Rogers unit, and the load is an M3 Lee, identifiable by the small machine-gun cupola on top of the rotating turret.

Unlike the Scammell which was normally hitched to a semi-trailer, the Diamond T was intended to be used with a drawbar trailer, and there was a simple steel ballast box at the rear, allowing weight to be placed over the driving wheels. There was a proper compressed-air braking system operating on all three axles, and apparently capable of leaving rubber on the road when used in anger! Curiously it lacked front-wheel drive, but so did the Pioneer, and, in practice, this rarely seemed to create a problem, and, whilst the change to an open cab in 1943 rather took the edge off the truck's good looks, its appetite for hard work was undiminished. Production started in mid-1941, when the trucks were supplied at an initial price of £3250 each, and continued until 1945. By this time, a total of more than 2000 tractors had been delivered to the British Army, with another 677 going to the Canadians, and 471 to the Red Army. The total number produced was 6554 vehicles.

From the moment that the first tractors were pressed into service in the British 8th Army campaign in North Africa, the Diamond T became the British Army's premier tank transporter. It retained this title until the mid-fifties when it started to be usurped by increasing numbers of Thornycroft Antars, but, nevertheless, it wasn't until 1975 that the last four Diamond Ts were finally demobbed.

Surplus Diamond Ts had already started to appear in military auction sales almost immediately after the end

● Small girl... huge truck! Open-cab Model 980 photographed at the start of the Historic Commercial Vehicle Society's annual London to Brighton run. The projection on the bonnet side indicates that the vehicle has been re-engined with the Rolls-Royce C6NFL diesel engine... a fact that is borne out by the legend 'Powered by Rolls-Royce' above the bulge.

● One of a modest number of Diamond Ts in preservation. This is a Model 981, identifiable by the winch fairlead rollers inserted into the front bumper to allow self-recovery... not, as is often said, by the replacement of the original steel cab with a simplified open-topped design.

ABOUT THE AUTHOR

Pat Ware has been a professional writer for more than 50 years. He is the author of more than 60 vehicle-related titles, and has specialised in military-vehicle subjects since 1995.

His expertise is recognised worldwide, and his books have been translated into a half-dozen languages.

In 2001, he was the founding editor of the UK's leading military-vehicle magazine, '*Classic Military Vehicle*', and he continues to contribute to respected military-vehicle journals in the USA and France. In 2015 he contributed to a 10-part TV show, '*War on Wheels*', for China Central Television.

His eclectic interests have also led to the publication of titles on subjects as diverse as the Cold War, commercial haulage, and iconic agricultural tractors.

● Nicely-restored Model 981, numbered as belonging to the US Army (USA 527476), but with the typically British overnight accommodation erected over the ballast box, and with the vertical exhaust pipe of post-war British Army Diamond Ts. Note also that the cab lacks the roof vent, a modification said to be present only on the 150 or so trucks supplied under the Mutual Defense Assistance Program (MDAP) in the early 'fifties.

of WW2, where they proved popular with heavy-haulage and recovery outfits across the world. Robert Wynn & Son, for example, bought their first Diamond T in 1947, eventually running a fleet of 30 of the beasts. In this guise, many of these trucks served for more years with their new owners than they had with the military. But, eventually, the capabilities of more modern equipment meant that the old warriors were finally retired... only to be snapped up by a new breed of owner as military-vehicle enthusiasts began to buy and lovingly restore Diamond Ts.

It seems that Ian Fleming was right... 'Diamonds' really 'are forever'!

● In the post-war years, the Diamond T was a popular choice with heavy-haulage companies. This example, a Model 981, was acquired by Sunter Brothers in 1962, and tows an intriguingly-boxed load from Distington Engineering, on a pair of eight-wheel bogies.

● Pickfords acquired their first Diamond T during the war years. This example, acquired in the early 'sixties exhibits the fleet number 4360, and has the distinctive canvas 'cab' on the offside, and the cut-off rear to the ballast box to improve rear visibility.

● Adopted in August 1943, the open cab was easier to build and, with the top bows removed, reduced the shipping height. It even saved a modest amount of steel, but it didn't do a lot for the former good looks of the truck.

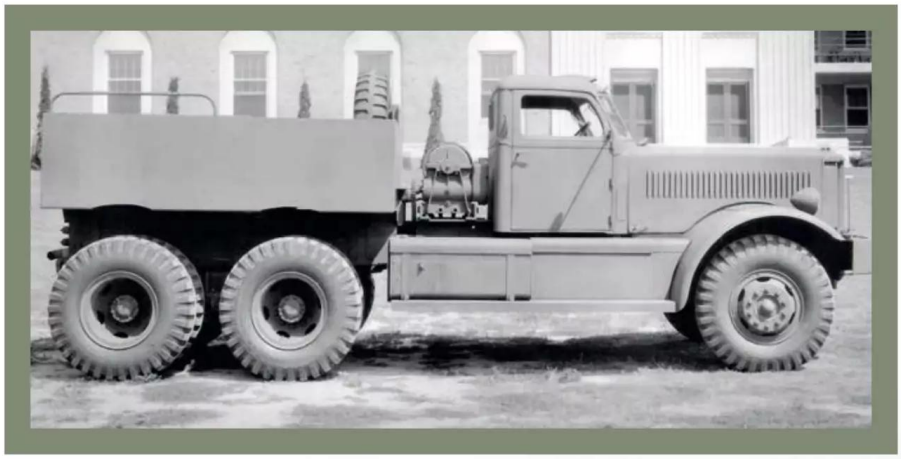
● Model 980 fitted with a fifth wheel in place of the steel ballast box to allow the truck to tow a 30-ton semi-trailer built by RA Dyson, Shelvoke & Drewry or SMT.

PULLING POWER

Desperate for tank transporters, the British Army turns to the US truck industry

First of all... some politics! In May 1937, in the interests of neutrality, President Franklin D Roosevelt encouraged the US Congress to pass the '*Neutrality Act*'. The act was designed to keep the USA out of future conflicts in Europe, and stated that, if any war broke out that threatened US security, an arms embargo would automatically be brought into force, and that loans or lines of credit for military equipment to any belligerent nation would be prohibited.

At the end of 1938, wary of what was going on in Europe, the President and the State Department had decided that the act was an incitement to war, since it prevented Britain and France from purchasing arms or aircraft from the USA, thus passively assisting Germany and other aggressor nations. The administration tried to amend the act to include a so-called 'cash-and-carry' provision that would have allowed the sale of US military materiel provided the goods were purchased with cash, and



● Prototype or early production Model 980 photographed at Aberdeen Proving Ground, probably in late 1941. On these early production vehicles, the winch controls were located inside the cab.

● The classic Diamond T Model 980 – with the original art deco cab – showing what it was made for... and the mud doesn't seem to be slowing the truck's progress any! The trailer is a Dyson three-line 40-tonner, and the load is a Churchill Mk 2 infantry tank.

were transported at the buyer's risk, in the buyer's own ships, sailing from ports outside the USA. The amendment failed.

In July 1939, Arthur Balfour, Chairman of Arthur Balfour & Company and of C Meadows & Company, made a visit to the USA to discuss the possibility of establishing an official purchasing mission. Both President Roosevelt and the Treasury Secretary Henry Morgenthau Jr were in favour, but it was to be another few months before the mission was actually established.

When Britain and France declared war on Hitler's Germany in September 1939, a further proclamation of US neutrality was issued, but, within two months Congress passed the '*Neutrality Act*' of 1939. Secretary of State, Cordell Hull, said that this act 'opened the arsenal of the United States to Britain

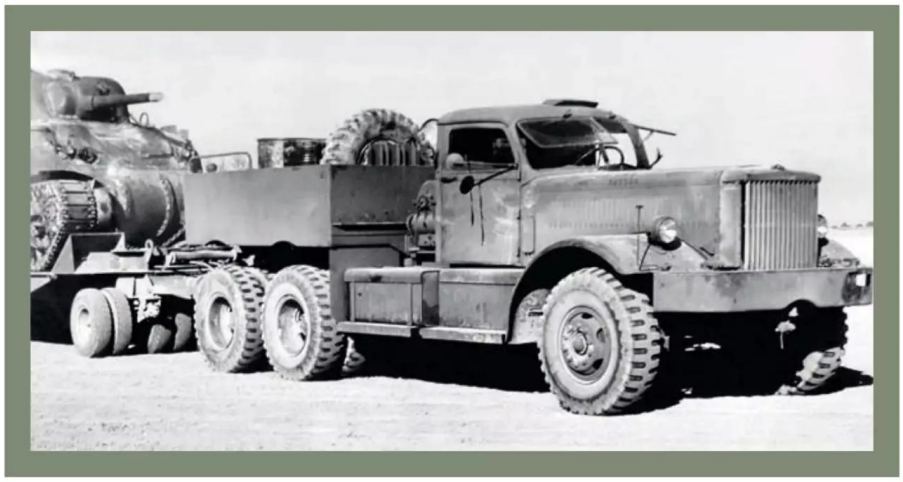
● The 4-ton 6x6 Models 967-975 were derived from the 10-ton Model 806 (on the right), which dated from 1937, and which, in turn, was based on the earlier Model 512 (on the left).

● During WW2, the Diamond T Motor Car Company won the Army-Navy 'E' Award four times... 'symbolising the official 'well done' of the nation's armed forces for the production performance of Diamond T men'.

● Before the Model 980 was put into production in 1941, the Diamond T company had already been involved in producing heavy trucks for the US and Canadian Armies. Here, two Model 969 4-ton recovery vehicles book-end a pair of Model 967 4-ton cargo vehicles.

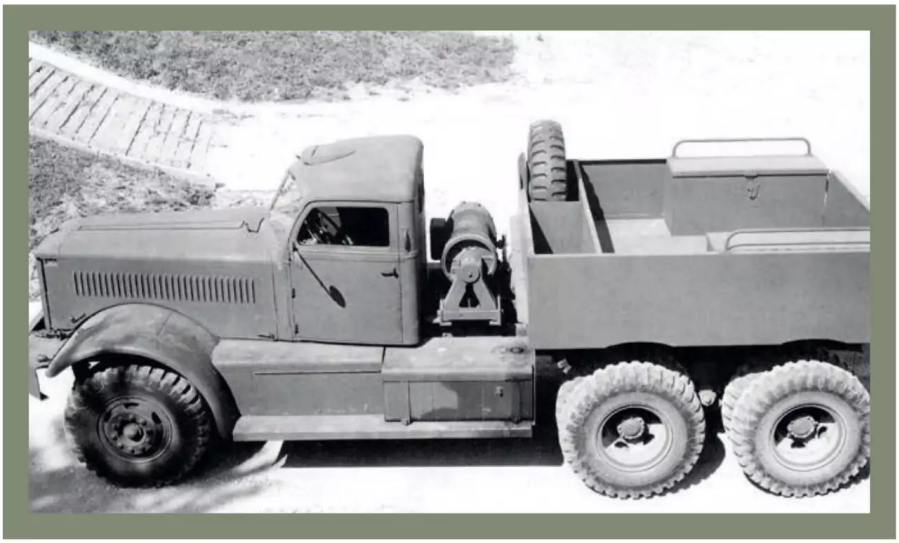
and France'. The arms embargo was effectively lifted, permitting all trade with belligerent nations to be placed under the terms of 'cash-and-carry', whilst at the same time allowing the US government to feel that it had remained neutral.

Needless to say, US manufacturers were eager to supply aircraft, trucks, and other equipment, with aircraft being seen as crucial. However, the British Purchasing Commission was also particularly interested in 'heavy' vehicles, the development of which had been largely ignored in Britain during the inter-war years. Approaches were made to a number of companies, including Mack, FWD, Ward LaFrance, Diamond T and White. They were asked to investigate the possibility of developing, and producing, with the minimum delay, a heavy tractor for tank transporter duties that could supplement the unsatisfactory numbers of Scammell Pioneers.



● Scruffy Model 981, identifiable by the winch fairlead rollers in the front bumper, hauling an M4 Sherman medium tank on a 45-ton Rogers trailer. The opened windscreens and dusty conditions would suggest that this was photographed at one of the US Army's desert proving sites.

Diamond T had already produced a heavy truck for the Canadian and US Armies in the form of the Models 967-975, rated at 4-tons. Essentially the same chassis was adopted for what was to become the mighty Model 980, a 12-



● Overhead view of the ballast box showing the storage compartment for the spare wheel and the equipment lockers. The photograph was taken at Aberdeen Proving Ground, Maryland.

ton prime mover rated for a trailered load of 40 tons, that could not only serve alongside the somewhat archaic Pioneer, but could also handle heavier tanks. The vehicles were initially supplied under Defence Aid contract at a unit price of £3250, but, after March 1941, all future supplies were made under the provisions of the '*Lend-Lease Act*'.

The Diamond T Model 980, and the later 981, was possibly the only example of a vehicle designed for the British Army that was also adopted by the Americans. And, with a load rating of 40 tons, it was one of the few vehicle types for which Britain was wholly dependent on the USA... other British tank transporters being rated at just 20 or 30 tons.

● Stating that it 'had too many wheels', the US Army only reluctantly adopted the Diamond T, originally classifying it as 'substitute standard' and later downgrading it to 'limited standard'. Much preferred for this role, was the 6x6 M26 'Dragon Wagon' produced by Pacific Car & Foundry and seen here in its armoured form.

Diamond T Motor Car Company

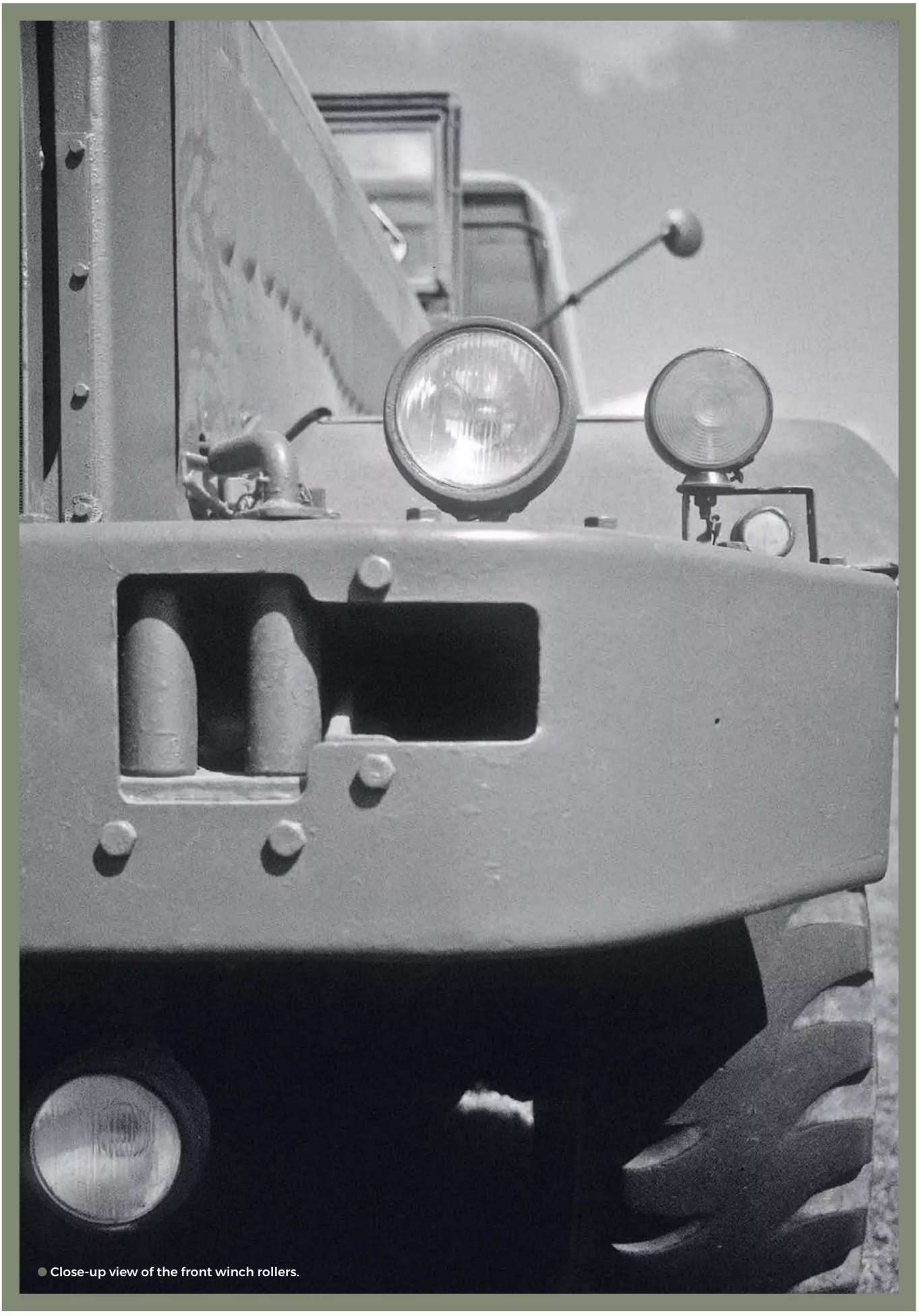
Charles A Tilt, the founder of the Diamond T Motor Car Company, produced his first motorised vehicle in 1905. By 1907, the company was offering a line of three models, but in 1911, emphasis was switched to truck production with a chain-drive 1 1/2-tonner powered by a Continental engine. By 1917, the company was also offering 2-, 3- , 3 1/2- and 5-ton trucks as well as constructing 1500 – although some sources suggest that the number was just 638 – examples of the 3 1/2-ton Model B Liberty truck for the US Army. Orders for another 2000 military trucks were placed after the end of the Great War. Development of the product range continued through the 'twenties and 'thirties and, in 1935, the company introduced an attractive streamlined cab, manufactured by the McLaughlin Body Company of Moline, Illinois. 'A truck doesn't have to be homely' said Charles Tilt, and, with its strong *art-deco* look, incorporating an outrageous V-shaped windscreen, this choice of cab made the trucks instantly recognisable. The cab went on to be used on the company's larger commercial and military trucks for 16 years, being finally phased out in 1951.

During WW2, alongside the Models 980 and 981, the company constructed 4-ton 6x6 trucks, including cargo, dump, tractor for semi-trailer, map reproduction, and recovery variants; the same chassis was also used to produce a machinery truck for the Canadian Army. There was also a small number of 1 1/2-ton and 2 1/2-ton trucks, bodied for a number of roles. Other products of the period included 12,421 M3, M3A1, T16, T48 and T19 half-tracked armoured personnel carriers and gun carriages, with the latter also constructed by Autocar and White.

A total of 35,257 trucks were constructed during the years 1940-45, and the Diamond T Motor Car Company won the Army-Navy 'E' Award

● Introduced in late 1942, the Model 981 differed from the original only by having a longer winch cable (500 feet, 152.5m, rather than 300 feet, 91.5m) and by having fairlead rollers in the left-hand side of the front bumper to allow the winch to be used for self-recovery.

● The British War Office was nervous of the forward winching facilities, and stated quite categorically that 'the forward winching facilities should only be used for self-recovery of the transporter'. This photograph demonstrates that the US Army had no such misgivings.



Close-up view of the front winch rollers.

four times. The award was presented to companies whose manufacturing facilities achieved 'Excellence', covering areas such as quality and quantity of production, overcoming obstacles, avoidance of labour stoppages, training, and good health-and-safety record keeping.

By 1951, Diamond T had ceased making light trucks altogether and by 1958, had been taken over by the White Motor Company, with the two companies eventually being based at the same site. Diamond T was merged with Reo in 1967, becoming Diamond Reo Trucks, before succumbing to bankruptcy in 1974. The name was eventually sold to Consolidated International of Columbus Ohio, and then a year later, was transferred again, this time to Osterlund Incorporated, under the aegis of Loyal Osterlund and Ray Houseal. Production of a single model, the Cummins-engined C116 'Giant', continued at Harrisburg, Pennsylvania until 1993, with the production of parts continuing until 2013.

In the mid-nineties, production was turned over entirely to the export market, mostly Australia, firstly under the name the New Diamond T Company, and later as Diamond Vehicle Solutions, marketing as T-Line Trucks.

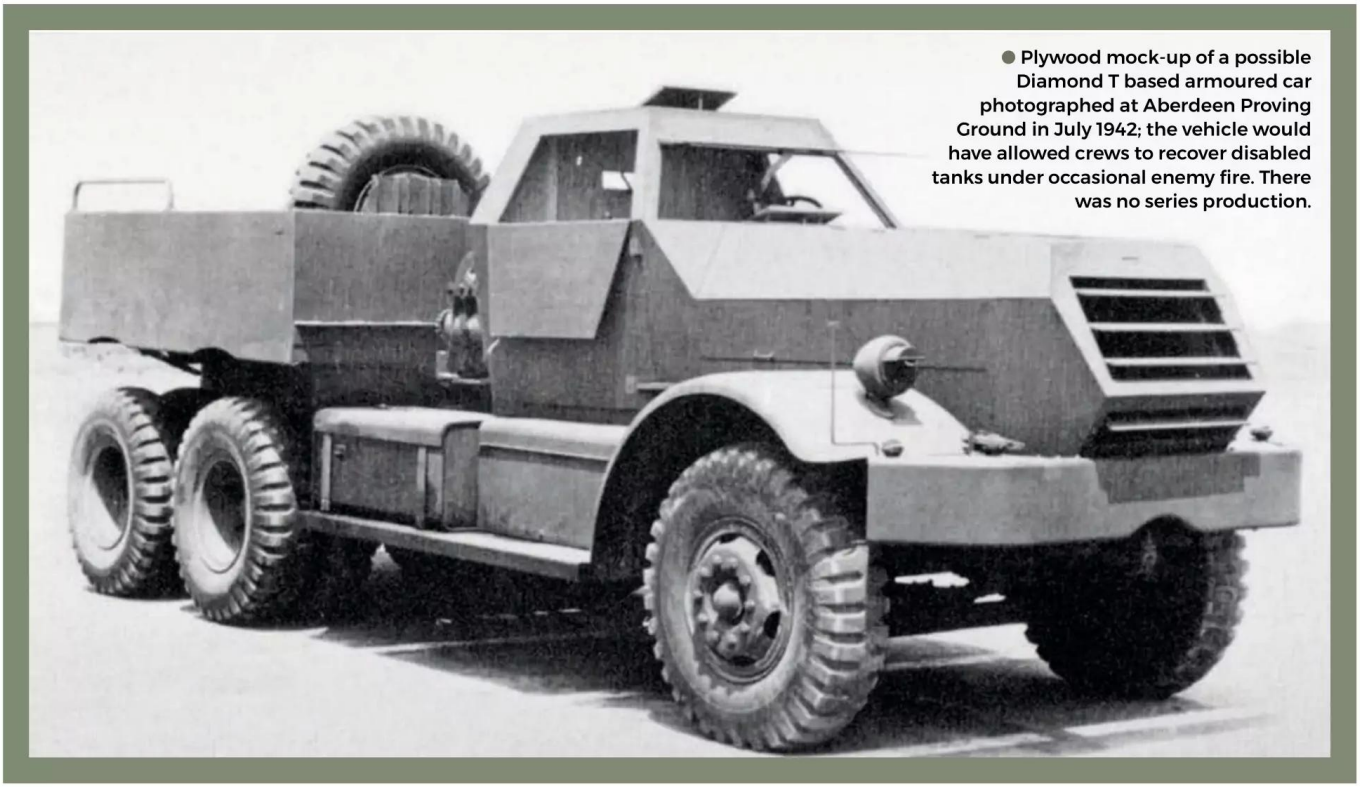
Development of the Model 980

The Diamond T Motor Car Company was just one of a number of truck manufacturers approached by the British Purchasing Commission, but it was the only company able to design and produce what was required within the timescale.

Developed jointly by the US Motor Transport Division and the Quartermaster Corps, the Diamond T Model 980 was intended to meet a British requirement for a road-going tank transporter that was capable of handling loads up to 45 (short) tons. It was anticipated that the truck would be deployed moving tanks from central points in Britain, to locations of threatened invasion and that there was no requirement for all-wheel drive, or for later conversion to all-wheel drive. Despite the Scammell tank-transporter train consisting of a tractor and semi-trailer, it was felt that in the interests of better negotiating the sharp turns encountered on the typically narrow, and often hilly routes in Britain, a prime

● Charles Tilt was on record as saying that 'a truck doesn't have to be homely', and, as if to prove the truth of this statement, the company's distinctive art deco cab, manufactured by the McLaughlin Body Company of Moline, Illinois, was introduced in 1935. It went on to be used on the company's larger commercial and military trucks until 1951.

● The open cab was adopted in August 1943 and, aside from slightly reducing the consumption of steel and lowering the shipping height of the cab, allowed the use of an M49 mount for a .50-calibre anti-aircraft gun... at least in the US Army.



● Plywood mock-up of a possible Diamond T based armoured car photographed at Aberdeen Proving Ground in July 1942; the vehicle would have allowed crews to recover disabled tanks under occasional enemy fire. There was no series production.

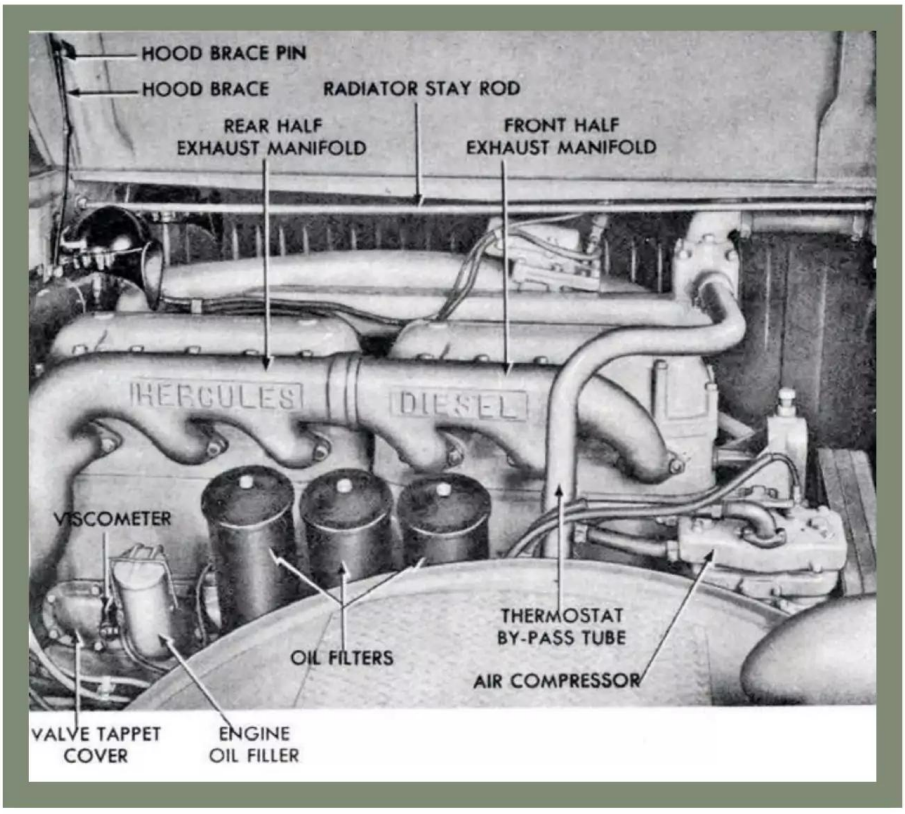
mover truck, together with a drawbar trailer would perform better.

Initial design work began in in late 1940, and the written specification for the truck included the following points:

- The transporter train was to be capable of carrying the British Mk II and Mk IV cruiser tanks and the American M3 (without cupola)
- The transporter train should be able to negotiate a right-angled bend within a road width of 28 feet (8540mm) without reversing
- Laden height was not to exceed 150in (3810mm) to allow passage under low bridges
- The vehicle was to be designed only for use on metalled roads
- Engine power was to be between 175 and 200bhp in order to obtain the best possible performance
- Production should employ proven components for the engine, transmission, axles, etc

The last point meant that the vehicle almost certainly needed to be based on an existing commercial chassis. In this case, it was that of the 4-ton 6x6 Models 967-975, which had been derived from the 10-ton Model 806, dating from 1937 and based on the earlier Model 512. The availability of a basic chassis design must have reduced the development timescale, as did the choice of proven automotive components. Diamond T engineers simply chose the most appropriate components and made sure they did their job. As with the Models 967-975, the engine was a Hercules, but in this case, a diesel rather than petrol unit, whilst the gearboxes came from Fuller, steering gear from Ross, axles from Timken Detroit, and brakes and air equipment from Timken and Bendix-Westinghouse.

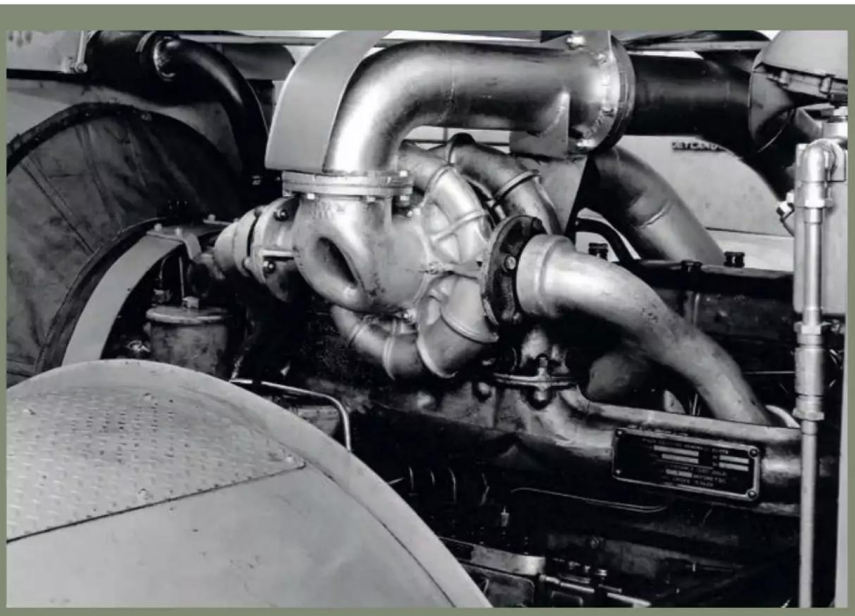
Under existing US regulations (AR 850-15) covering areas such as vehicle weight, overall dimensions, axle loadings and tyre sizes, it was not



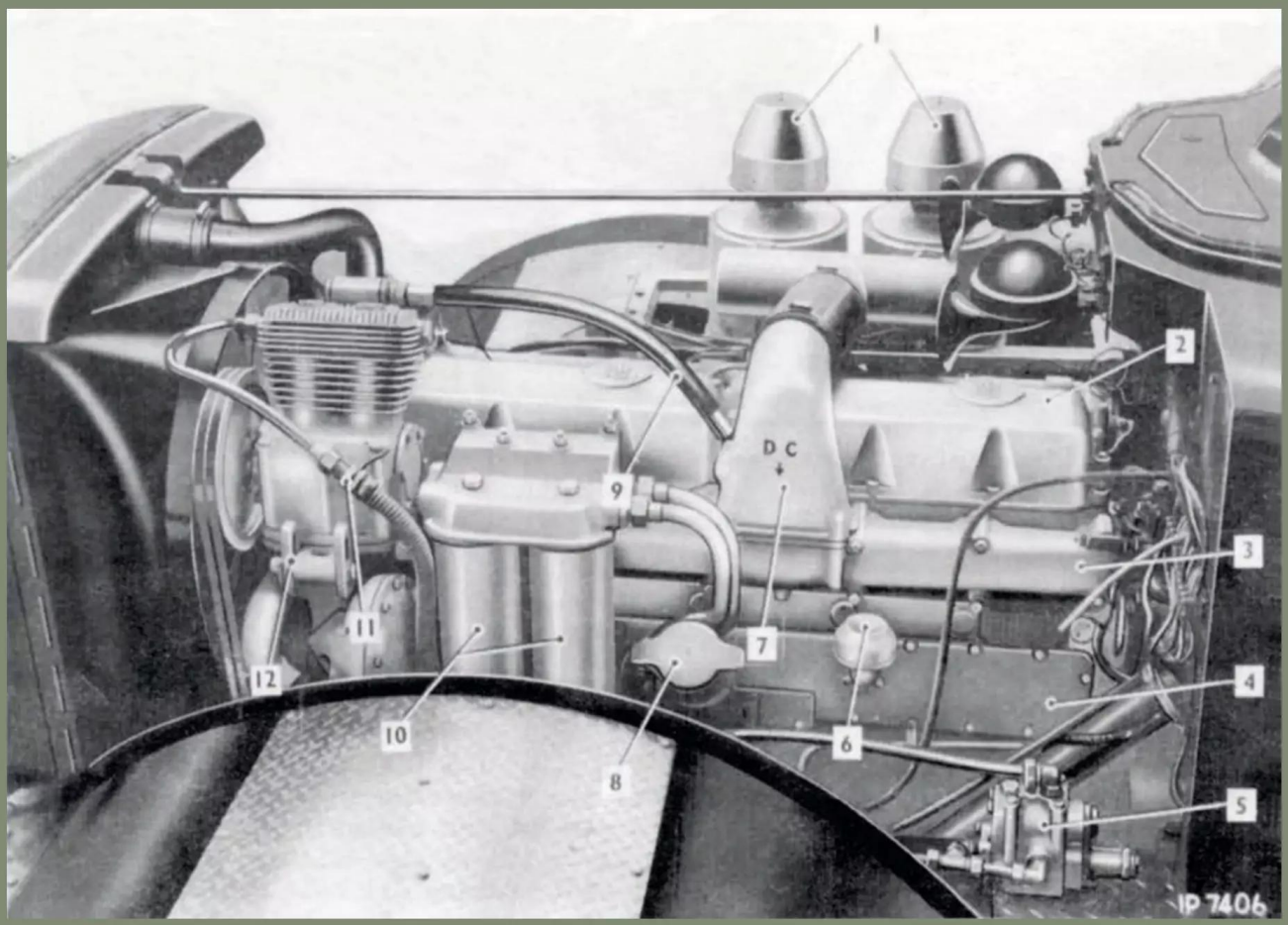
● The Diamond T was powered by a Hercules DFXE six-cylinder diesel engine, producing 201bhp (150kW) gross from a capacity of 14,633cc (893in³).

possible to design a tractor that offered optimum cross-country characteristics. Thus there was no requirement for all-wheel drive included in the specification. This was just as well, since there was also a lack of capacity in the US motor industry for the production of heavy-duty driven front axles.

But, the result was a truck that combined the ability to move the heaviest tanks then in service, with a rugged, heavy-duty appearance... and which was described by the Diamond T Company as 'the largest vehicle of its type ever built'. Its exceptional good looks were the result of the *art-deco* styled cab, combined with a near six-foot (1830mm) long, coffin nose, that was visually balanced by a plain steel ballast box at the rear. Top speed on the road was 23mph (37km/h) – which, although relatively unimpressive, was considerably better than the Scammell

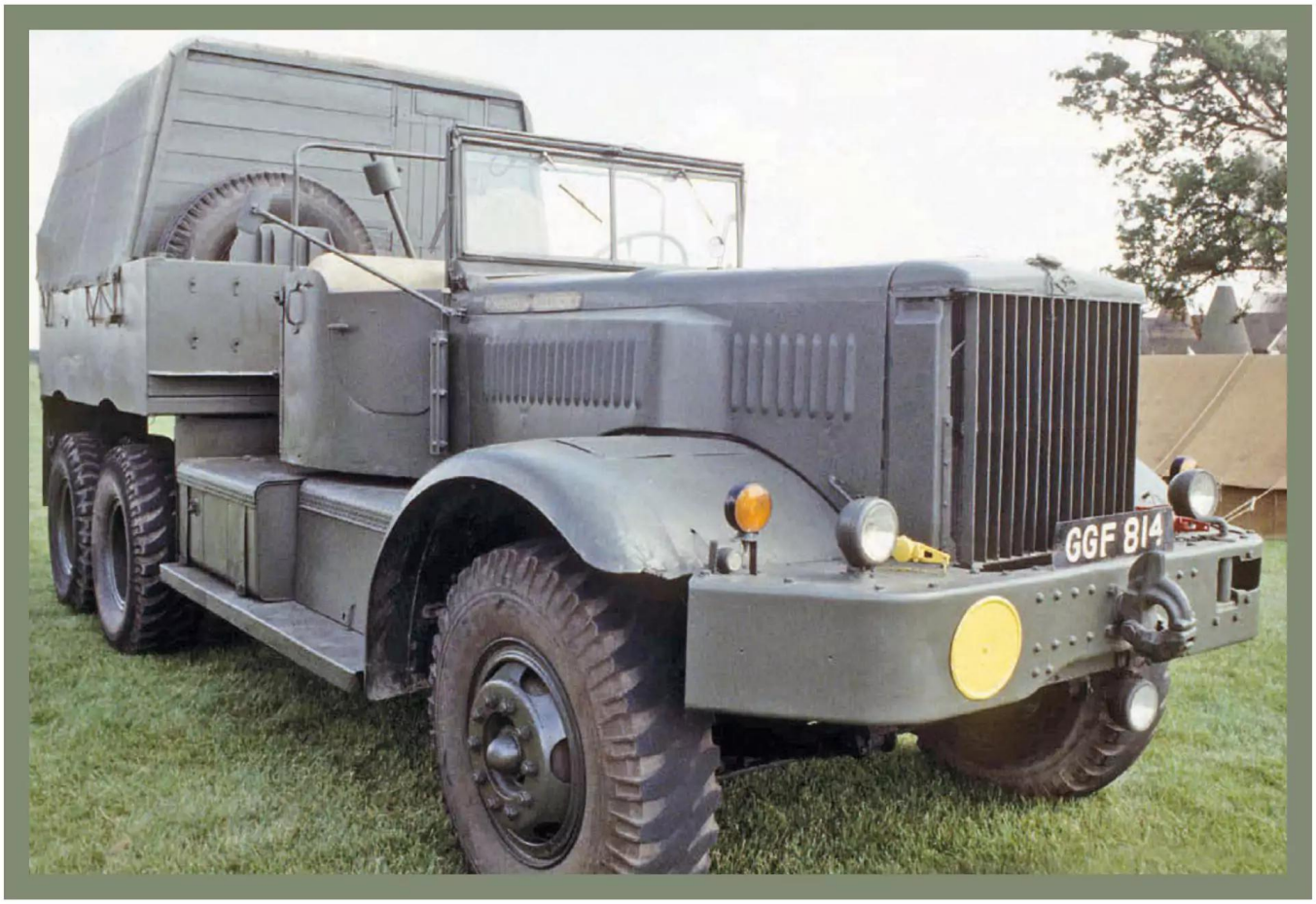


● Before the selection of the Rolls-Royce C6NFL-143 engine, trials were conducted using a turbocharged Leyland O.600 engine producing 175bhp (130kW) from 9.8 litres (598in³). The engine was not felt to be sufficiently reliable.



● During the mid-fifties, most of the Diamond Ts remaining in service with the British Army were re-engined. The original Hercules engine was replaced by a Rolls-Royce C6NFL-143 with a power output of 175bhp (131kW) from a capacity of 12,170cc (743in³).

1 Air cleaners
2 Rocker cover
3 Induction manifold
4 Push-rod cover
5 Air-system unloader valve
6 Crankcase breather and air cleaner
7 Air-intake elbow
8 Lubricating-oil filler
9 Compressor air-inlet connection
10 Lubricating-oil filters
11 Compressor air-delivery connection
12 Adjuster for compressor-belt tension

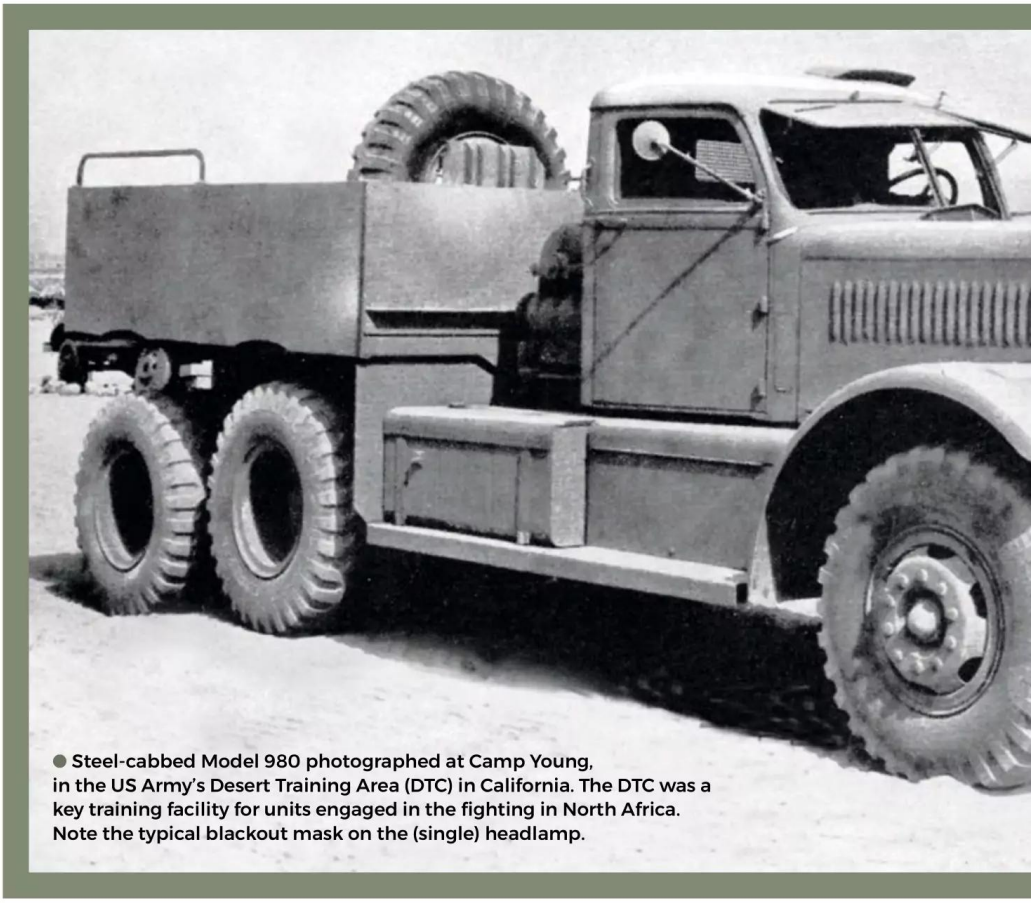


● Open-cabbed Model 981 fitted with the Rolls-Royce engine. The large central towing hook was a post-war British modification.

Pioneer – and the gross permitted towed load was 51.34 tons (52.27 tonnes), giving a gross train weight of 79.50 tons (80.95 tonnes).

A pilot model was scheduled for delivery to the US-based Inspection Board in August 1941, a date which was missed by only a month. The vehicle was put through a series of trials, and production started in October, with the first trucks appearing in Britain, or in-theatre in North Africa, during 1942.

A second vehicle was procured by the US Quartermaster Corps, and was subjected to trials at Aberdeen Proving Ground during November 1941. This led to the US Army negotiating for 200 tank transporters 'of the British type', the first of many hundreds. Nevertheless, the US Army never fully embraced the vehicle, much preferring the massive M26 tractor produced by Pacific Car & Foundry – generally described as the 'Dragon Wagon' – and even as late as April 1944, US Army Ground Forces were on record as saying that 'positive steps [were to] be taken that no Diamond Ts [were to] be shipped to any theatre except where specifically requested, for a specific purpose'.



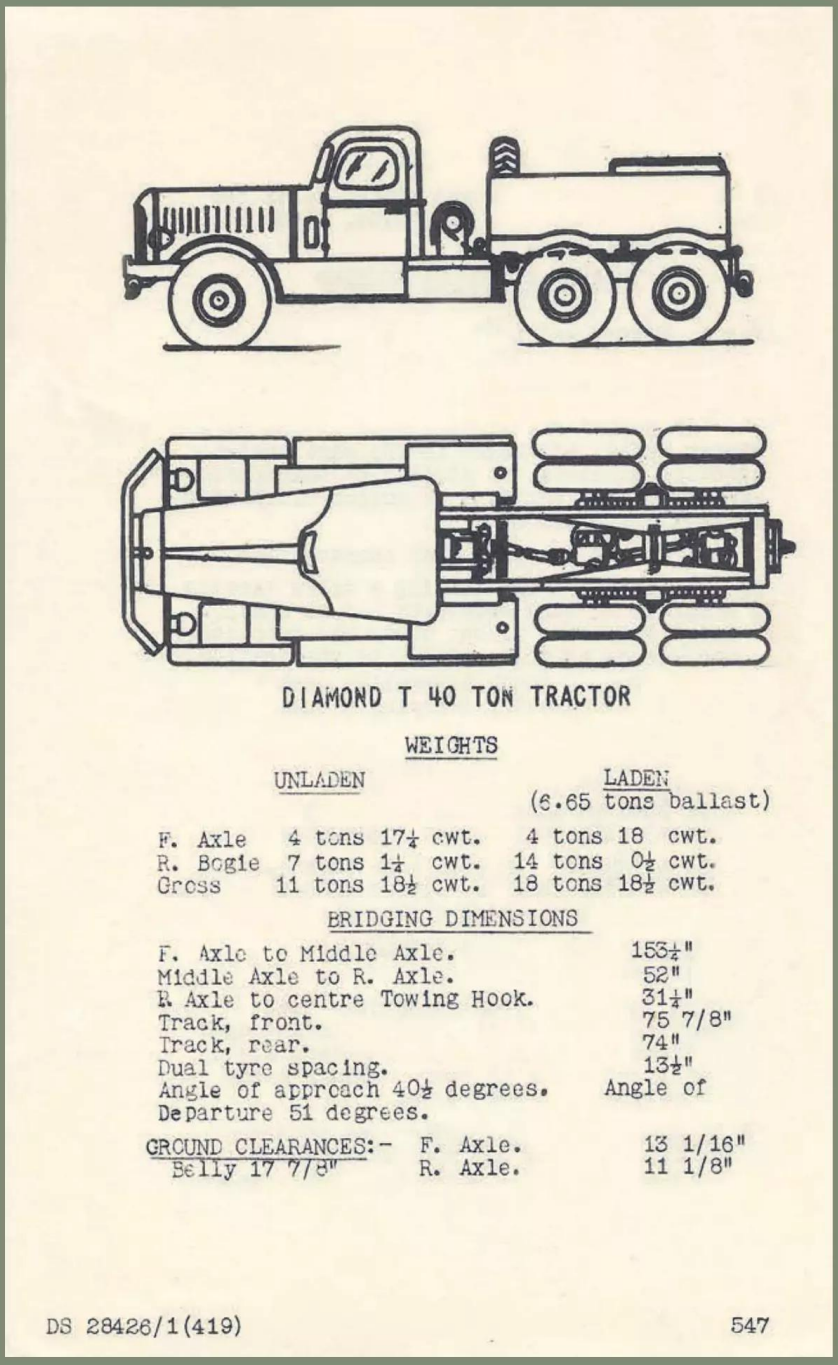
● Steel-cabbed Model 980 photographed at Camp Young, in the US Army's Desert Training Area (DTC) in California. The DTC was a key training facility for units engaged in the fighting in North Africa. Note the typical blackout mask on the (single) headlamp.

Nevertheless, the Diamond T served with the US Army throughout WW2. The tractor was described as the M20, and the complete tractor-trailer combination was designated 'truck-trailer, 45-ton, tank transporter, M19'.

Model 981

The Diamond T was produced in just two variants – the original Model 980 and the later Model 981, with the latter appearing in late 1942, at first for the US Army. A single example of the Model 981 was supplied to the Studebaker Proving Ground for trials in July 1944.

In practice the Model 981 differed from the 980 only by virtue of having winch fairlead rollers in the front bumper to allow for forward winching, and in the fact that the winch carried 500 feet (152.5m) of steel cable rather than the 300 feet (91.5m) provided with the Model 980. There was also an additional pulley located beside the cable rollers at the rear. In theory, this meant that the Model 981 could be properly described as a 'tank recovery tractor', as opposed to a 'tank transporter'. However, the British War Office did not consider that the forward winching facilities were sufficiently robust to withstand the heavy loads of recovery work and stated quite categorically that 'the forward winching facilities should only be used for self-recovery of the transporter'... a command that was widely ignored!



DIAMOND T 40 TON TRACTOR

WEIGHTS

	UNLADEN	LADEN (6.65 tons ballast)
F. Axle	4 tons 17¼ cwt.	4 tons 18 cwt.
R. Bogie	7 tons 1¼ cwt.	14 tons 0½ cwt.
Gross	11 tons 18½ cwt.	18 tons 18½ cwt.

BRIDGING DIMENSIONS

F. Axle to Middle Axle.	153½"
Middle Axle to R. Axle.	52"
R Axle to centre Towing Hook.	31¼"
Track, front.	75 7/8"
Track, rear.	74"
Dual tyre spacing.	13½"
Angle of approach 40½ degrees. Departure 51 degrees.	Angle of

GROUND CLEARANCES:- Belly 17 7/8" F. Axle. 13 1/16" R. Axle. 11 1/8"

DS 28426/1(419) 547

● Simple drawing of the Model 980 tractor, complete with outline dimensions, taken from the British Army's *'Data book of wheeled vehicles'* issued by the Ministry of Supply, the last edition of which was published in 1945.

Price

Until August 1942 when the Ordnance Board took over, procurement of the Diamond T was the responsibility of the US Motor Transport Division on behalf of the British Ministry of Supply (MoS) and the US Quartermaster Corps.

In 1943, the total value of contracts SM2147 and SM2148 was quoted as $13 million, covering 1000 tractors, plus $2.75 million for 500 trailers. This gives a unit price of $18,500 for a complete transporter train... at the exchange rate of the period, this works out at around £4500, with the price of the tractor alone being £3250.

● With the tailgate dropped, this early Model 980 shows the storage lockers together with a rack for two jerrycans; the white-painted differential was a courtesy to following drivers when operating under blackout conditions.

● The standard British drawbar trailer was a 24-wheeled 40-ton design, produced by Cranes of Dereham, RA Dyson, Shelvoke & Drewry, Hands (Letchworth), British Trailer Company, and SMT (Scottish Motor Traction).

Production

The trucks were assembled at the Diamond T plant in Chicago, Illinois and production continued until May 1945, by which time, the total number of trucks produced had reached 6554. Annual totals were 425 in 1941, 1623 in 1942, 1198 in 1943, 1779 in 1944, and 846 in 1945, with a further 677 produced for Canada. A shortage of production capacity at Diamond T saw some constructed under licence by FWD (the Four Wheel Drive Auto Company) of Clintonville, Wisconsin.

The high proportion of scrap being used in the casting process led to a shortage of cylinder blocks for the Hercules DFXE engine during 1944. This, in turn, caused a hiatus in the production of the trucks since no plants other than the Lakey Foundry at Muskegon, Michigan, where the casting work was done, were able to take on the project.

During the period 1950 to 1953, well after the military Thornycroft Antar was put into production, the Ministry of Supply was supplied with a further 150 Hercules-engined Diamond T Model 981 tractors under the Mutual Defense Assistance Program (MDAP) arrangements. Fitted with closed cabs, they can be identified by the omission of the roof vent and the inclusion of small windows in the rear quarter panels. These tractors had been rebuilt from US Army surplus, but they were numbered as though new, in two series, 56BN99 to 57BN48, and 96BN92 to 97BN91.

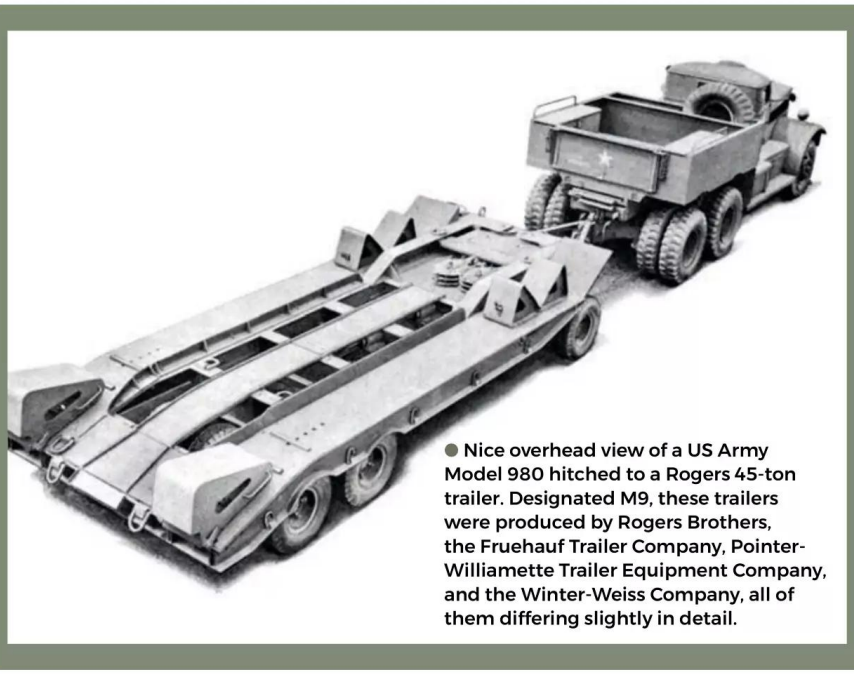
PKD shipping

Many of the trucks that came to Britain, or to overseas theatres, were shipped in 'partially knocked down' (PKD) crated condition using so-called 'single unit packs' to save shipping space. The axles, engine, radiator, mudguards and winch were in place on the chassis, but the body and cab were not fitted; eight wheels and tyres were placed on top of the frame, and the remaining three were placed on the floor of the crate under the running boards. Two cabs were placed in separate crates, and two ballast bodies were packed together and shipped direct from the manufacturer, Gar Wood Industries Inc of Wayne, Michigan.

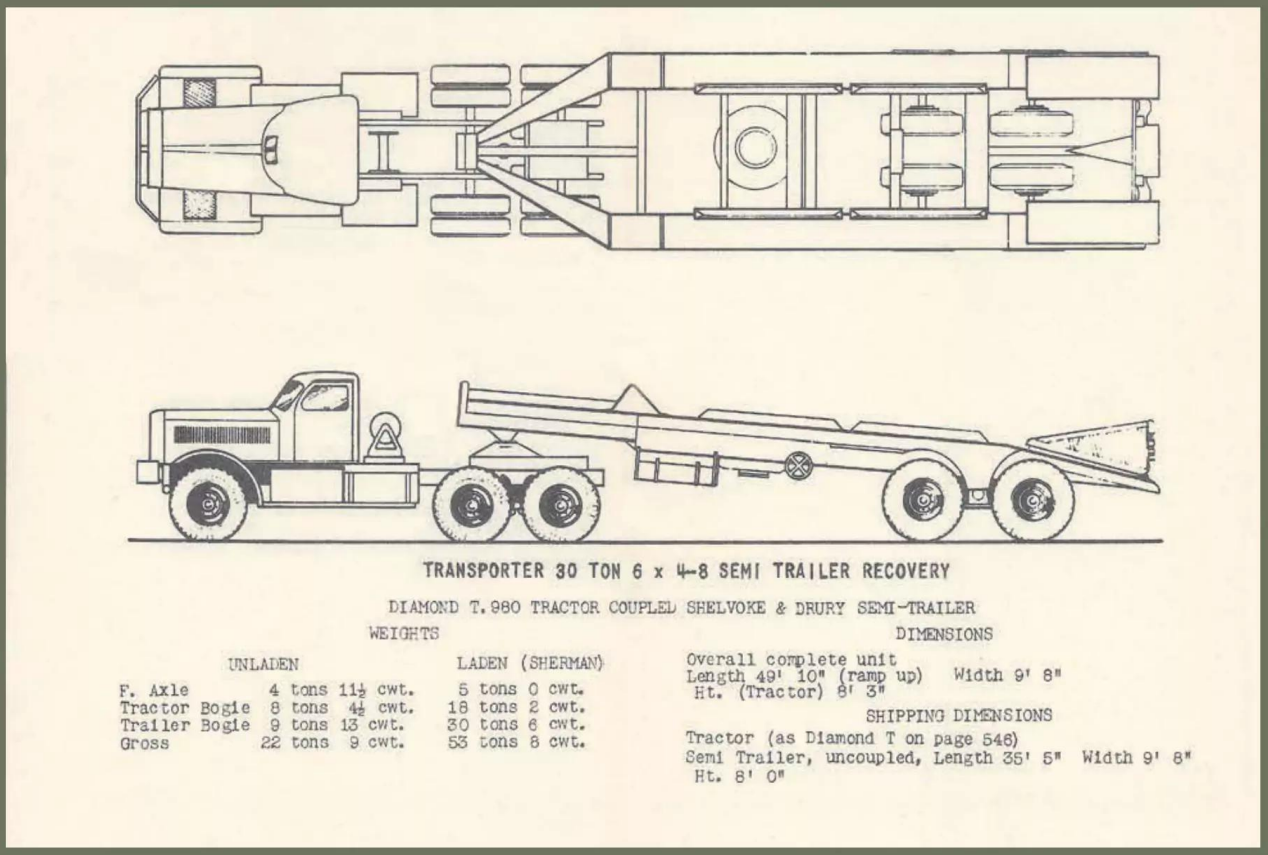
Reassembly in Britain was, notably, carried out by Pearsons of Liverpool,

● Early-production steel-cabbed Model 981.

● Designed by Cranes of Dereham, the British 40-ton trailer was capable of accommodating most of the Allied tanks of the WW2 period.



● Nice overhead view of a US Army Model 980 hitched to a Rogers 45-ton trailer. Designated M9, these trailers were produced by Rogers Brothers, the Fruehauf Trailer Company, Pointer-Williamette Trailer Equipment Company, and the Winter-Weiss Company, all of them differing slightly in detail.



TRANSPORTER 30 TON 6 x 4–8 SEMI TRAILER RECOVERY

DIAMOND T.980 TRACTOR COUPLED SHELVOKE & DRURY SEMI-TRAILER

WEIGHTS

	UNLADEN	LADEN (SHERMAN)
F. Axle	4 tons 11½ cwt.	5 tons 0 cwt.
Tractor Bogie	8 tons 4½ cwt.	18 tons 2 cwt.
Trailer Bogie	9 tons 13 cwt.	30 tons 6 cwt.
Gross	22 tons 9 cwt.	53 tons 8 cwt.

DIMENSIONS

Overall complete unit
Length 49' 10" (ramp up) Width 9' 8"
Ht. (Tractor) 8' 3"

SHIPPING DIMENSIONS

Tractor (as Diamond T on page 548)
Semi Trailer, uncoupled, Length 35' 5" Width 9' 8"
Ht. 8' 0"

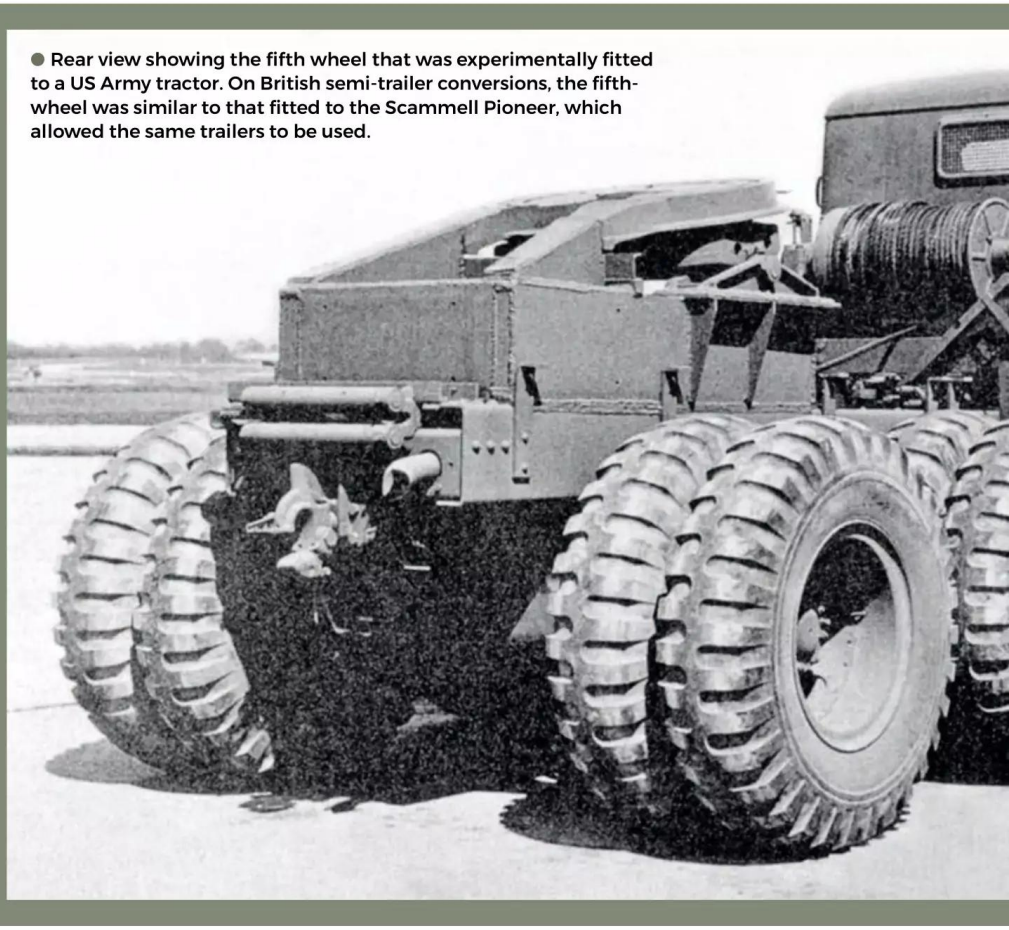
● Drawings and outline dimensions for the semi-trailer variant of the Diamond T; the ballast box was removed and a fifth wheel fitted in its place. Once again, these drawings are taken from the British Army's *'Data book of wheeled vehicles'*.

LEP Transport of Goole, the Michelin Tyre Company at Stoke-on-Trent, Tom Garner in Manchester, and NW Nash in Cardiff.

Modifications

During the production cycle of the vehicle there were very few changes made to the specification.

The most notable of these came in August 1943 when a wider, three-man open-topped cab, with small half-height doors and canvas top and side curtains, was adopted. The cab couldn't hold a candle to the good looks of the original, but there was a weight saving of 300 lb (136kg) of steel, and with the top removed and the windscreen folded, the overall height was reduced... at least until an AFV was put on board! In this form the truck is often erroneously described as the Model 981, whereas the designation 981 is properly applied to trucks that include winch fairlead rollers in the front bumper to allow self-recovery or forward winching, regardless of whether the cab was open or closed.



● Rear view showing the fifth wheel that was experimentally fitted to a US Army tractor. On British semi-trailer conversions, the fifth-wheel was similar to that fitted to the Scammell Pioneer, which allowed the same trailers to be used.

● British fifth-wheel conversion hitched to a 30-ton semi-trailer. A total of 444 of these semi-trailers were constructed by RA Dyson, Shelvoke & Drewry and SMT.

Other minor changes include the repositioning of the winch controls from inside the cab to appear on the winch itself, also in mid-1943, and the inclusion of paying-on gear, this latter being a British Army modification. The radiator header tank was also slightly modified, losing the distinctive 'Diamond T' badge, and the transfer box was superseded by an interchangeable unit incorporating various internal improvements.

Trials were carried out in April 1944, with what these days would be called 'super singles'... larger-section tyres that would obviate the need for the twin rear wheels, which were never popular with the military authorities due to the ease of picking-up stones between the tyres, which could subsequently cause damage. There were considerable advantages in improved traction, particularly in thick mud, but the change was never adopted for production.

And finally, although nothing came of this, in May 1942, a plywood mock-up was produced of a fully armoured cab, radiator and engine compartment which would have allowed tank recovery under fire. However, limited demand and weight considerations meant that the British General Staff decided not to pursue this option and, in December 1943, the project was cancelled.

Replacement engine

The British Army continued to operate Diamond Ts well into the post-war period, with the type accounting for some 700 of Britain's 1000 tank transporters in 1954. Indeed, the last one remained in service until the mid-seventies. However, as time marched on it had become obvious that many of the original Hercules engines were worn out, and that, anyway, a more modern and efficient engine was required if the Diamond T was to even attempt to keep up with the traffic.

In 1953, trials had been initiated by the Fighting Vehicles Research & Development Establishment (FVRDE) to assess the suitability of two engines as a replacement for the original Hercules DFXE. The first was the Rolls-Royce C6NFL-143, a normally-

aspirated six-cylinder diesel engine producing 175bhp (130kW) from 12.17 litres, and one of a family of high-performance overhead-valve engines available in four-, six- and eight-cylinder form. Intended for road, rail and marine applications, and described collectively as the C Series, the engines were produced at the former Sentinel works in Shrewsbury by Rolls-Royce Motors, Military Engine Division. The C Series engines shared common design features regardless of the number of cylinders, providing a high degree of interchangeability of components such as pistons, liners, valves and bearings across the range.

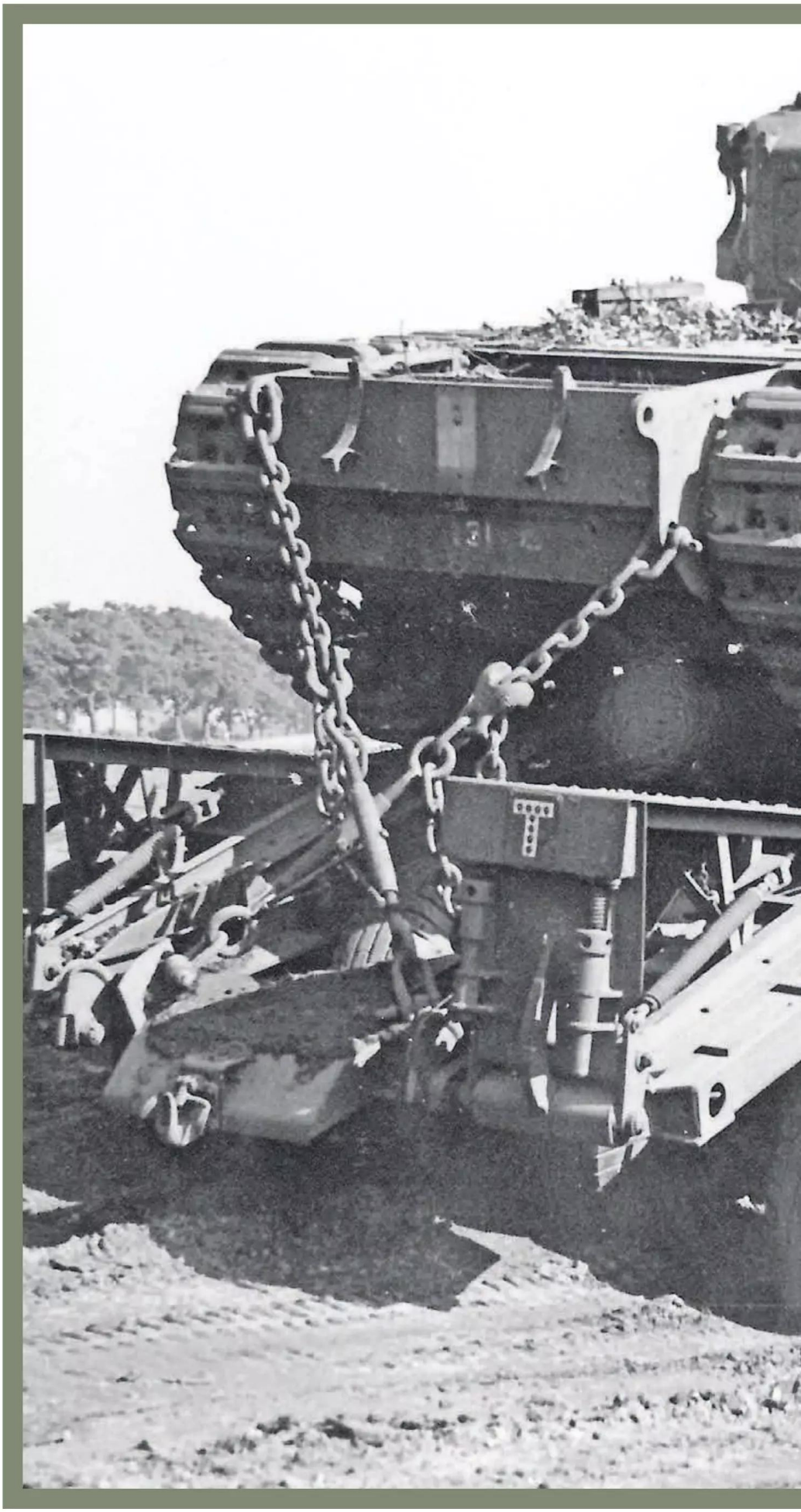
The tractor selected for the conversion work was registered 22YZ11.

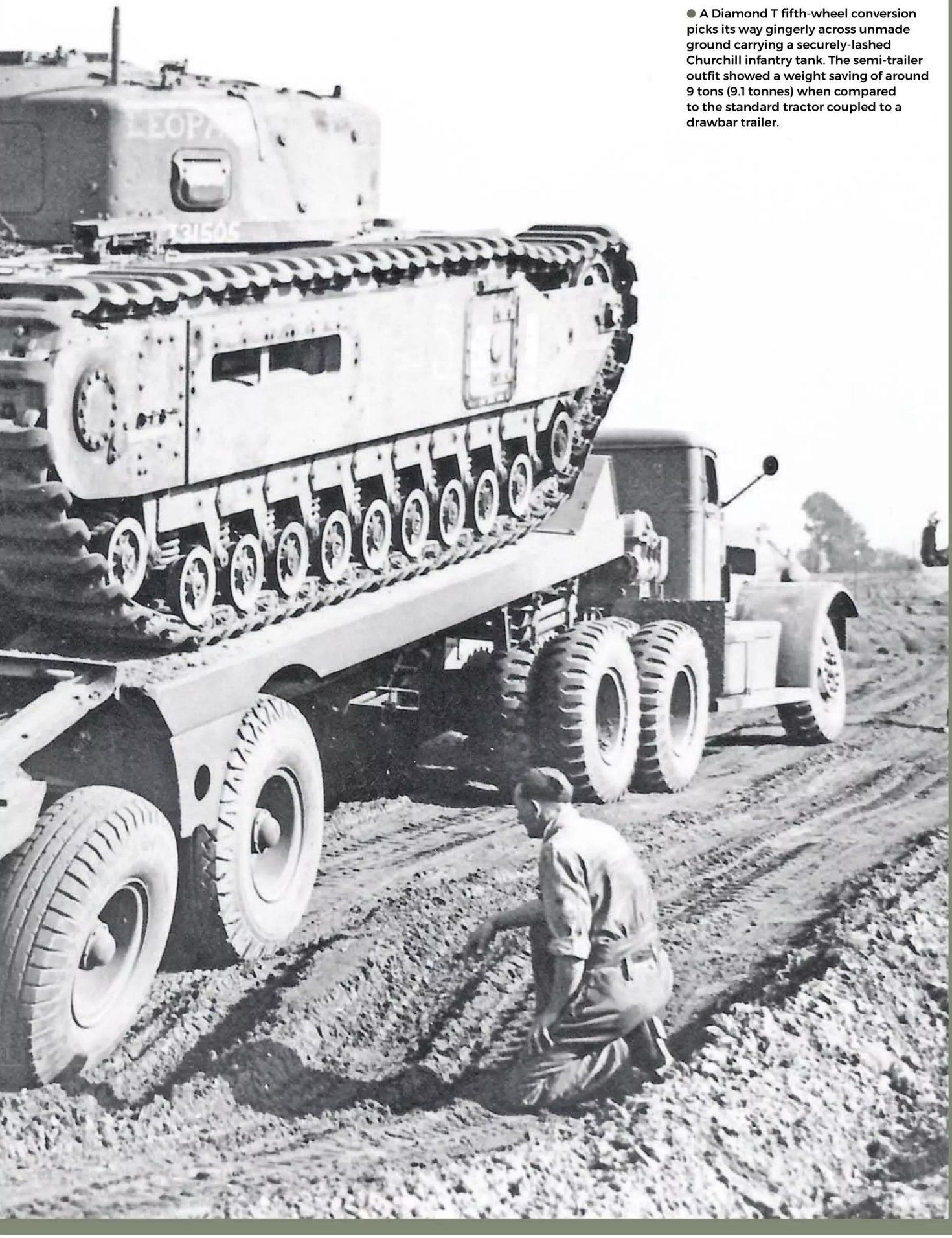
The other engine was a turbocharged Leyland O.600 producing 175bhp (130kW) from its 9.8 litres (598in³). In this case, the vehicle chosen for conversion was registered 20YZ09. It acquitted itself well during the ensuing trials – when it could be persuaded to run – but as the accompanying report stated 'reliability has yet to be demonstrated'. Once the trials were over, the modified vehicle was disposed of at auction in May 1956, where it was described as 'chassis only', by which we should assume that the engine had been removed and returned to Leyland.

Whilst the Leyland engine exhibited improved performance when compared to the Hercules, it was the Rolls-Royce engine that was selected as the more reliable option, despite its higher price. On paper, the figures for maximum power output and torque were inferior to the equivalent figures for the original Hercules engine, but the power was produced across a more useful band of engine revolutions which brought an increase in both acceleration and top speed – although the latter was still only 30mph (50km/h). The engine was also more economical and provided an increased range.

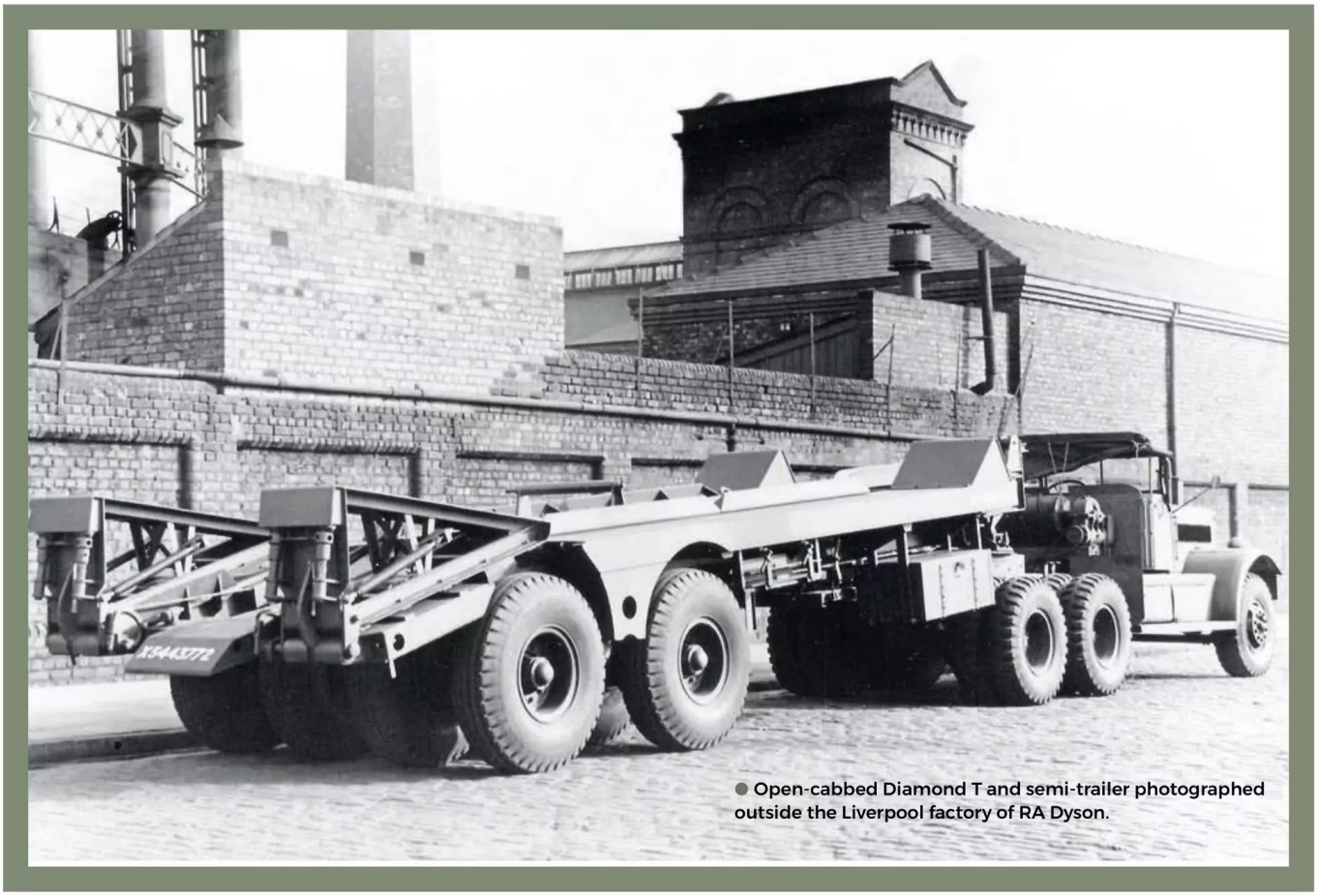
At the end of the trials programme the C6-engined tractor was retained at FVRDE at Chobham, where it served as a useful prime mover until demob in 1967.

During 1956/57 most of the remaining Diamond Ts in the British Army were converted to Rolls-Royce power. A so-called '*Electrical and mechanical engineering regulation*'





● A Diamond T fifth-wheel conversion picks its way gingerly across unmade ground carrying a securely-lashed Churchill infantry tank. The semi-trailer outfit showed a weight saving of around 9 tons (9.1 tonnes) when compared to the standard tractor coupled to a drawbar trailer.



● Open-cabbed Diamond T and semi-trailer photographed outside the Liverpool factory of RA Dyson.

(EMER S532/1, supplement 1) was issued which detailed the work involved. This included the use of new engine mountings, modifications to the chassis and wheel arches, new clutch, and a power bulge in the offside of the engine compartment cover to clear the twin air cleaners and to allow for the installation of a supercharger at a later date... which, incidentally, never happened.

In order to be able to identify these machines, the nomenclature was amended to 'Tractor, 50 ton, GS, 6x4, Diamond T 980/C6N and 981/C6N'. A new User Handbook was issued in July 1958 to reflect the engine changes, in which the allowable gross train weight, including 25,000-31,500 lb (11,364-14,319kg) of ballast, was said to be 91.25 tons (92,910kg).

Trailers

The standard British trailer was the 24-wheeled 40-ton design, produced in Mk 1, Mk 1/1 and Mk 2 form by Cranes of Dereham, RA Dyson, Shelvoke & Drewry, Hands (Letchworth), British Trailer Company, and SMT (Scottish Motor Traction). In order to boost the supply of trailers, the American company, Rogers Brothers, were

● The Cummins-engined Federal 604, which was also co-produced by Reo as Model 28XS, was a fifth-wheel tractor designed to be used with a 20-ton Trailmobile semi-trailer, or as a tanker. A total of 450 came to Britain under the Lend-Lease arrangements.

● Model 980 fifth-wheel tractor coupled to a 30-ton semi-trailer which has been (over) loaded with a Churchill infantry tank weighing some 40 tons (40.7 tonnes).

● Rolls-Royce engined Model 981, beautifully restored in the classic wartime 'Mickey Mouse ears' disruptive camouflage, makes its presence known in the War & Peace Show arena. This example still has the Diamond T logo cast into the radiator header tank, which identifies it as an early production example, and also has tie-down cleats and footman loops fitted to the ballast box to allow the erection of a canvas 'bivvy' or shelter, a typical British modification.


18
70

supplied with copies of the drawings for the Cranes Mk 1 trailer and came up with a very similar design, rated at 45 (short) tons. These trailers were also manufactured by Fruehauf Trailer Company, Pointer-Williamette Trailer Equipment Company, and the Winter-Weiss Company, all of them differing in detail. The Fruehauf product was probably closest to the Rogers in design, whilst the Winter-Weiss differed the most. All of the US trailers were designated M9, regardless of manufacturer, and the US-built trailers were also used by the British Army.

During the post-war years, the British Army's Diamond Ts were often coupled to the FV3601 drawbar trailer. This was similar to the wartime trailers, but uprated to 50 tons by virtue of having an additional axle line, giving 32 wheels.

Semi-trailers

Although nothing beats a drawbar trailer for sheer carrying power, the combination of a tractor and semi-trailer has advantages in manoeuvrability – at least in open spaces – and there were experiments using the Diamond T in conjunction with a 30-ton eight-wheeled semi-trailer similar to that employed with the Scammell Pioneer. The ballast body was removed, and a Scammell-style fifth-wheel turntable mounted across the chassis between the rear wheels. Trials showed that, in an emergency, it was permissible to over-load the trailer to 40 tons.

A total of 444 of these 30-ton semi-trailers were constructed by RA Dyson, Shelvoke & Drewry and SMT.

During 1945, the US Army also experimented with a semi-trailer conversion, fitting a conventional pattern fifth-wheel to a Model 981 diverted from current production, and coupling it to a modified M9 trailer, designated T64, in which the front axles were removed and the frame extended to allow the fitment of the upper component of the fifth wheel together with a king pin, giving a semi-trailer with a short horizontal deck and folding ramps. It was suggested that a field conversion kit be produced which included the frame extension, the upper and lower components of the fifth-wheel, and the king pin, together with all of the necessary brackets to allow the modifications to be made to trucks that were overseas. The project completion date was set to be 1 July 1945, but the end of the war brought an end to the project.

There is some suggestion that, at the same time, at least one Diamond T tractor was also fitted with a 240bhp (179kW) Hall-Scott 440 petrol engine in place of the diesel, under the designation T31. What a beast that would have been... but, although a pilot was sent to Aberdeen Proving Ground for trials, sadly, there was no series production.

Other tank transporters

True enough, the Diamond T replaced the Scammell Pioneer – it was more powerful and altogether more capable, and was also available in larger numbers. But other tank transporters were in use with the British Army at the time, including tractors from Albion, Federal, and Mack.

The Albion CX24S was a 6x4 petrol-engined tractor coupled to a 20-ton tank transporter semi-trailer. Production started in 1941, with a total of 751 examples produced by 1944, when production ended. It had been intended to operate alongside the 20-ton Scammell Pioneer, but was quickly deemed unsuitable as a tank carrier and was down-graded to 15-ton rating and used to carry cable drums, telegraph poles, etc. Funnily enough, the CX24S was the first heavy equipment tractor to go ashore during the D-Day landings, carrying Royal Engineers' road-construction equipment.

Looking rather like the Diamond T's cousin, the Cummins-engined Federal 604, which was also co-produced by Reo as Model 28XS, was a tractor designed to be used with a 20-ton Trailmobile semi-trailer, or as a tanker. A total of 1443 examples were produced during the years 1942 to 1944, and some 450 of these came to Britain under the Lend-Lease arrangements. It may have helped to swell the numbers of Scammell and Albion 20-ton outfits, but it was never going to threaten the Diamond T.

Finally, we have a tank-transporter conversion of the Mack NM5-NM8, cargo truck, either used in conjunction with a Rogers, or other, 40/45-ton drawbar trailer, or converted to a tractor with the addition of a fifth wheel and used in conjunction with the semi-trailer of the Albion CX24S. Despite the advantage of all-wheel drive, once again, this truck was not a substitute for the Diamond T, although it was often used for shifting new tanks from the factory to the storage depots.

● **Designated T64, the US Army developed this semi-trailer for possible use with a modified Diamond T M20 tractor in 1944/45. Despite being considered easier to handle than either the original M20 tractor or the M26 'Dragon Wagon', there was no series production.**

THE DIAMOND STANDARD

The Diamond T under the magnifying glass

Unlike the venerable Scammell Pioneer, with its unique pivoting front axle and walking-beam rear-suspension arrangements, both of which helped to give some measure of off-road performance, the Diamond T was simply a conventional truck. Admittedly, it was impressively powerful and generally reliable, and was much larger than anything seen in Britain at that time. Under the bonnet, the massive Hercules engine produced 201bhp (150kW), compared to the Pioneer's figure of just 102bhp (76kW), and it was more than capable of hauling tanks weighing up to 50 tons (50.9 tonne) or more. However, it could be defeated by loose surfaces, and wouldn't win any prizes for innovation, even if it did scoop the top award for its attractive lines!

● The central position of the spare wheel and the reflectors fitted to the sides of the ballast box indicate that this is the prototype of the Model 980.

But, regardless of size, the Diamond T was typical of low-volume US truck manufacturers. The engineers at Diamond T designed the chassis to suit the job in hand, and then selected the most appropriate proprietary automotive components to meet the customer's requirements. The result was a truck almost like no other.

Engine

Under that extended bonnet – which was almost 65in (1651mm) long, with no less than 30 cooling louvres – there was a Hercules DFXE, a six-cylinder direct-injection overhead-valve diesel engine with a capacity of 14,633cc (893in^3). The engine had a compression ratio of 14.8:1, and the maximum power output was 201bhp (150kW) at a leisurely 1600rpm.

The cylinder block and crankcase consisted of a one-piece casting to ensure maximum cooling and rigidity, and each of the two cylinder heads covered three cylinders. Unfortunately, the heads had a propensity for cracking between the inlet and exhaust valves. The crankshaft was supported on seven shell bearings, with shell bearings similarly used for the connecting rods. A patented feature of the Hercules engine was that the combustion chamber was formed to one side of the cylinder bore in such a way as to increase turbulence at the moment of ignition, ensuring that

ignition occurred at exactly the right time and at the proper rate of burning. The engine, which weighed a substantial 2486 lb (1130kg) was supported on four mounting points, with a support frame at the front, and side mounts at the rear.

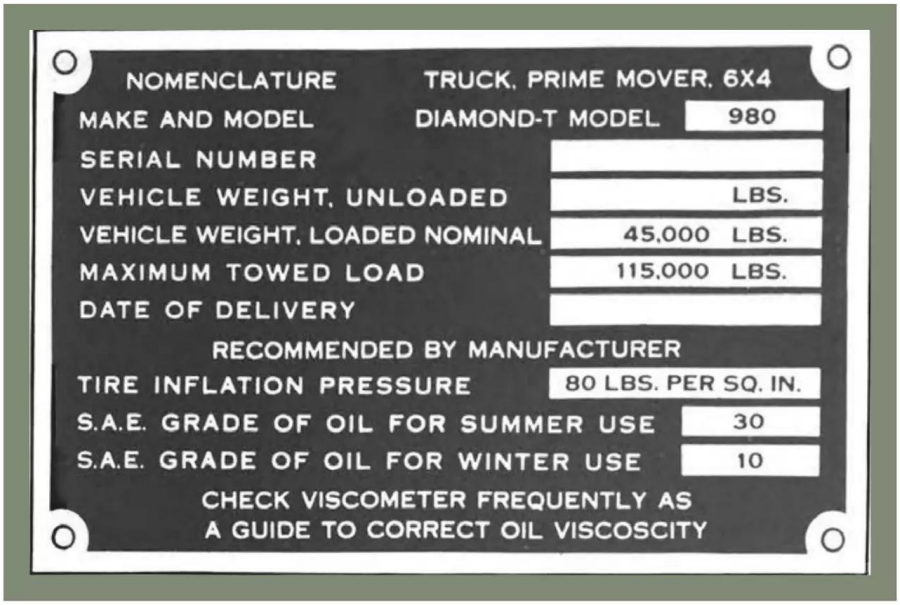
Fuel-injection equipment, including the pumps and the injector nozzles, was by American Bosch. The governor was originally set at 1600rpm, but the figure was later increased to 1880rpm. To aid cold starting – which was never a strong point – there was an electrical flame-thrower type manifold heater. The exhaust pipe exited low-down on the right-hand side of the chassis; in the post-war years, a vertical extension pipe was fitted to carry fumes clear of crew operating around the vehicle.

During the period 1956/57, remaining Diamond Ts in British service were

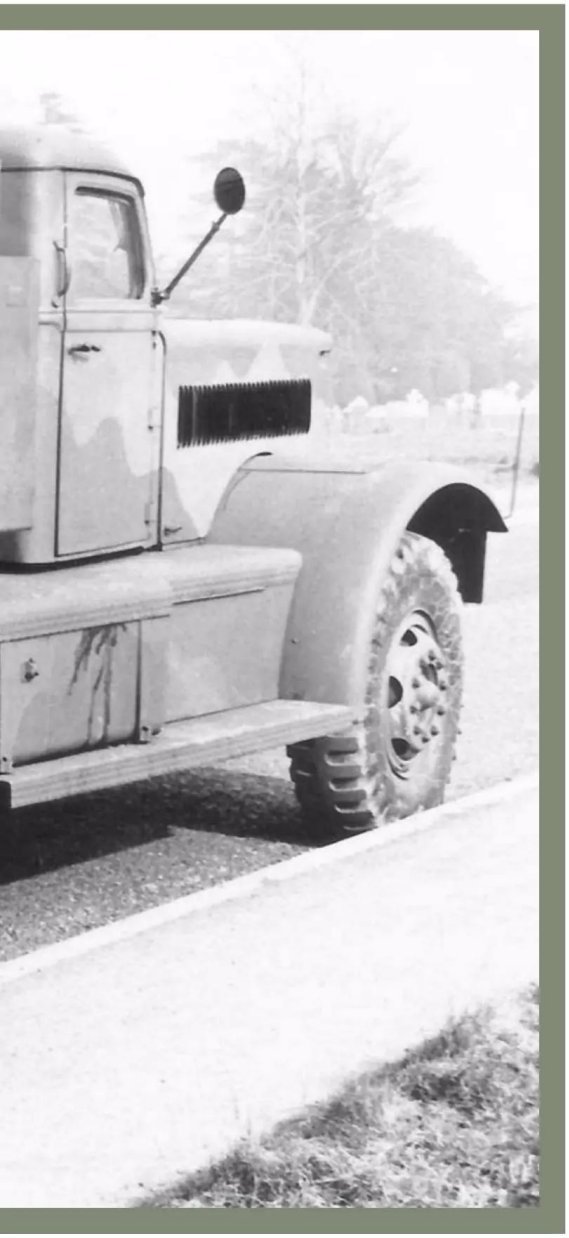
● Open-cab Model 981 of the US Army coupled to a Rogers 45-ton M9 trailer. The marking 'ASCZ' on the right-hand bumper end indicates 'Advance Section, Communications Zone' which means the photograph was taken after February 1944.

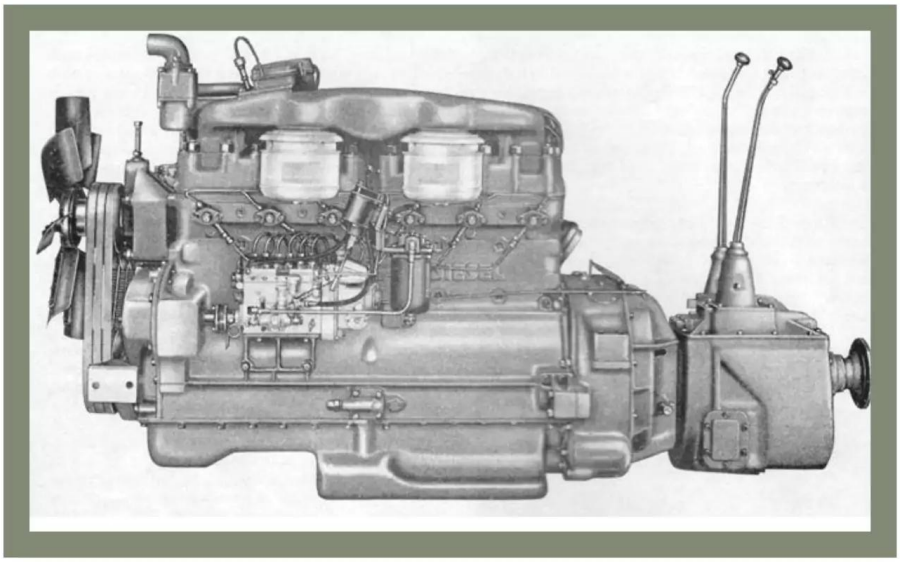
● Early Model 981 finished in a shadow-pattern green and black camouflage. This truck was one of 394 examples supplied under contract SM2059.

updated with a Rolls-Royce C6NFL-143 engine, a six-cylinder normally-aspirated direct-injection diesel engine producing 175bhp (131kW) from a capacity of 12,170cc (743in³), with a compression ratio of 16:1. Although, on paper, the power output was less than that produced by the Hercules, it came across a more useful range. A fair amount of work was involved in the changeover, with new engine mounts, new exhaust downpipe, and a new compressor for the braking system, and removal of the mysterious engine oil viscometer. Modifications were also made to the inner wings and to the right-hand engine compartment panel in order to provide clearance for the twin air cleaners, and to provide space for the subsequent fitment of a supercharger or turbocharger… which never happened.

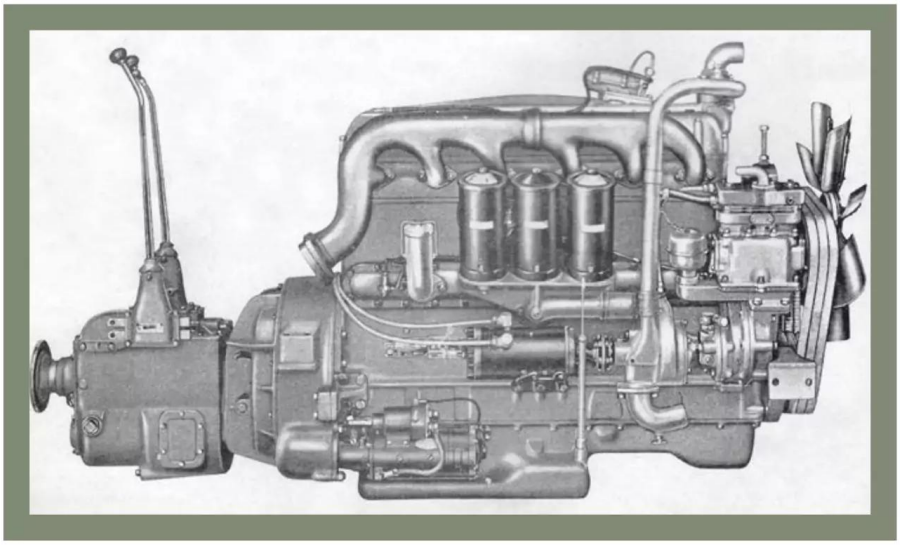


● Data plate for the Model 980 showing the basic common information before the vehicle-specific information – the serial number, vehicle weight, and date of delivery – were added.

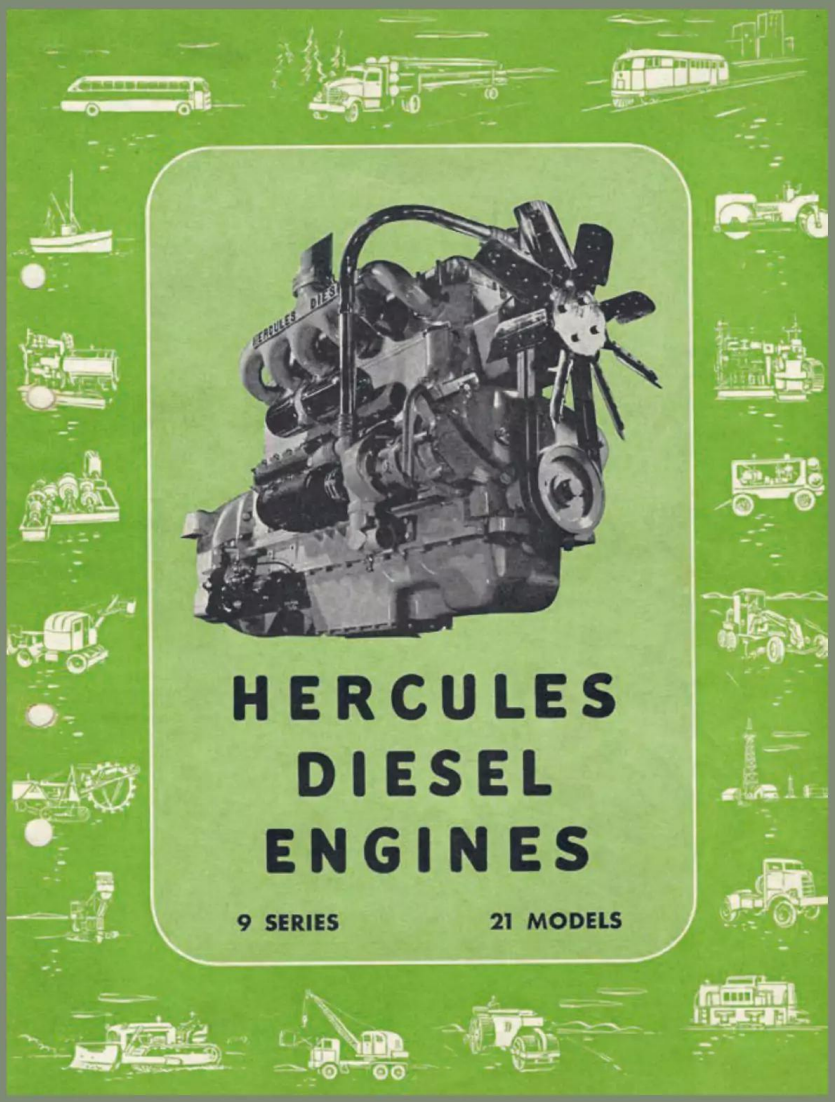




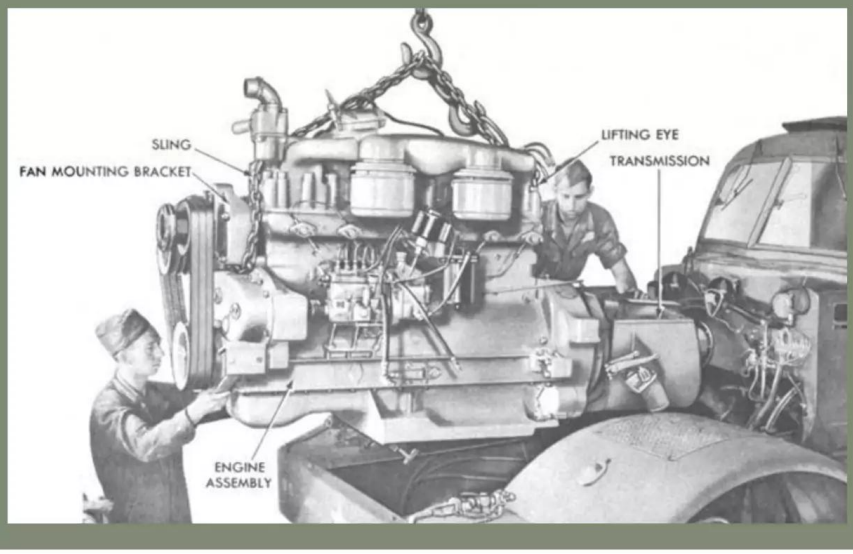
● Left-hand side of the Hercules DFXE engine complete with clutch and the primary gearbox. The American Bosch injection equipment can be seen towards the front of the block.



● Right-hand side of the DFXE power unit showing the starter motor, generator, three full-flow oil filters, and the belt-driven air compressor.



● Period sales leaflet for Hercules engines. Aside from the DFXE, the leaflet described 20 other power units in nine families, ranging from the two-cylinder DIXC to the eight-cylinder DNX V-8-D, the latter with a massive 24.06 litres (1468in³) displacement and a power output of 400bhp (298kW).



● This shot, showing the engine being removed from the chassis, emphasises the massive size of the power unit, which weighed a substantial 2486 lb (1130kg)... more than one ton!

The engine cooling system held 61 US quarts – some 12.7 imperial gallons (58 litres) – and consisted of a water pump, thermostat, fan, and finned-tube radiator, together with the connecting pipework. The use of dirty water, often a necessity in the field, quickly resulted in a build-up of sludge in the radiator, and, just to add to the mechanics' miseries, the water pump, supplied by Packless Industries, was not very reliable.

Transmission

Engine power was transmitted to the gearbox by means of a 14.5in (368mm) WC Lipe twin-plate clutch, which was not entirely trouble-free, or on Rolls-Royce engined tractors, via a single plate Borg & Beck unit of 18in (457mm) diameter.

The main gearbox was a Fuller 4B/86 four-speed unit connected via a short shaft to a three-speed auxiliary unit, either a Fuller 3A/86, or later superseded by a 3A/92. Final drive was by conventional open propeller shafts, with one running to the differential of the forward rear axle, and a second, angled shaft, connecting the two axles together. The second of these two shafts was prone to breaking-up.

It must also be said that the choice of gear ratios came in for a lot of criticism, with a wide gap between third and fourth.

Axles, steering and suspension

The front axle, which, of course, lacked drive shafts, was an I-section beam, Timken-Detroit model 27454W, whilst the rear axles, also from Timken-Detroit, were both SD462W double-reduction types with six torque rods used to ensure the axles remained in alignment. Unlike the Scammell Pioneer, there were servo-assisted Timken brakes on all six wheels, pressurised by a Bendix-Westinghouse compressor; air couplings at the rear of the vehicle allowed the trailer brakes to be connected to the same air system or for tandem operation.

Steering gear came from Ross, consisting of a T74 twin cam and lever box, with the drop arm connected to the nearside hub by a short drag link, and a fully-adjustable tie rod, located behind the axle, connecting the two hubs together.

Suspension was by semi-elliptical multi-leaf springs, inverted at the rear and pivoted on a cross tube. Offset disc

wheels were fitted, supplied by Budd, with all 10 (plus one spare) of the same size (20x9-10) mounting 12.00-20 14-ply tyres, with a clamping ring to secure the tyre.

Chassis

The main chassis members were of heat-treated chrome manganese steel channel, 10.125in (260mm) deep and 0.31in (8mm) thick, in combination with seven channel cross-members riveted to the main channels. Heavy triangular gussets were used to reinforce the rear bogie mounting. To allow a disabled tractor to be towed, a large hook was provided at the front. The overall length of the chassis was 270in (6864mm).

Twin fuel tanks were mounted under the winch platform, one each side, each with a capacity of 75 US gallons (62.4 imperial gallons, 283 litres), and batteries were housed in compartments under the cab floor.

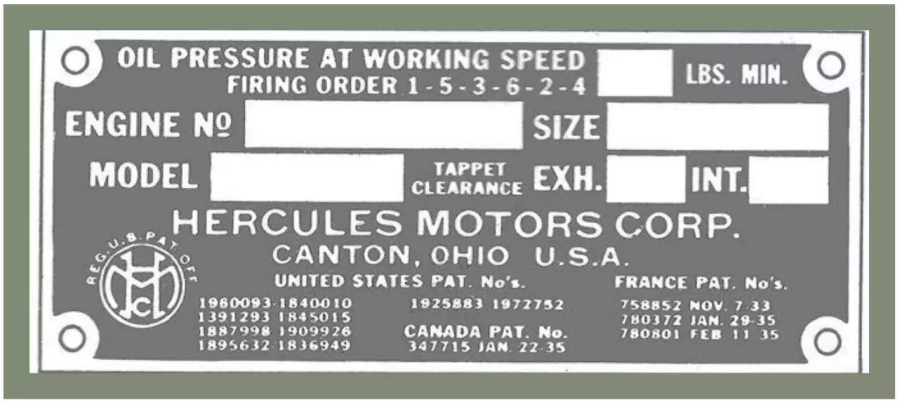
Cab and ballast box

Very much in the *art-deco* style, the original closed cab, manufactured by the McLaughlin Body Company of Moline, Illinois, was of all-steel construction and was spring-mounted to the chassis. Accommodation was provided for a crew of two on separate adjustable seats. Despite the inclusion of vents in the scuttle and in the peak of the roof, the cab was an extremely hot place to be when the truck was working hard in hot climates, even with the windscreen wound to its fully-open position.

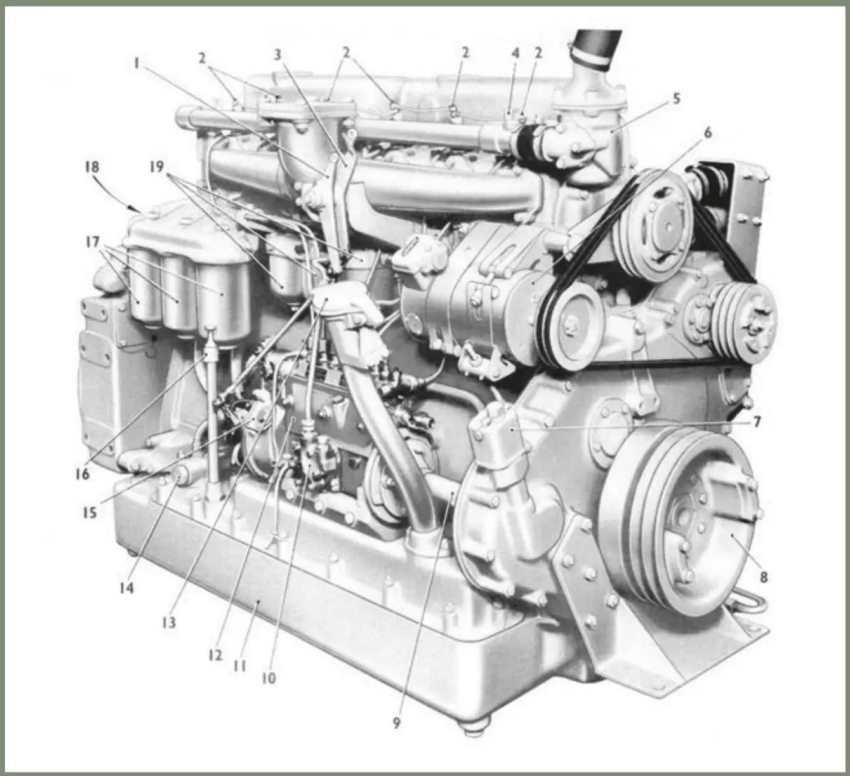
In August 1943, a US government decree was issued that stated, where practicable, all US-built trucks be fitted with open cabs. These cabs were easier to build and, with the top bows removed, reduced the shipping height, and even saved a modest amount of steel.

The open cab that was devised for the Diamond T had curious half-height steel doors, a folding windscreen, and a removable canvas top. Unlike the original closed cab, there was now accommodation for three crew members. The open cab also allowed for the installation of an M49 machine-gun ring mount over the passenger seat.

The dashboard was well-stocked with instruments, together with switches for the lighting system, windscreen wipers, etc. The instruments comprised



● Blank engine data plate, located on the right-hand side of the engine, and listing the various Hercules patents.



● During the 'fifties, the British Army replaced the original Hercules engines, many of which were past their best, with this Rolls-Royce C6NFL-143 power unit.

1 Accelerator control lever
2 Fuel-injector spill connections
3 Stop control lever
4 Thermometer union
5 Thermostat housing
6 Generator
7 Engine service counter
8 Viscous damper
9 Coupling shaft for fuel injector pump
10 Fuel lift pump
11 Oil reservoir
12 Fuel-injector pump
13 Lubricating-oil filler cap
14 Oil-pressure relief valve
15 Governor for fuel-injector pump
16 Dipstick
17 Oil filters
18 Oil-filter by-pass valve
19 Fuel filters

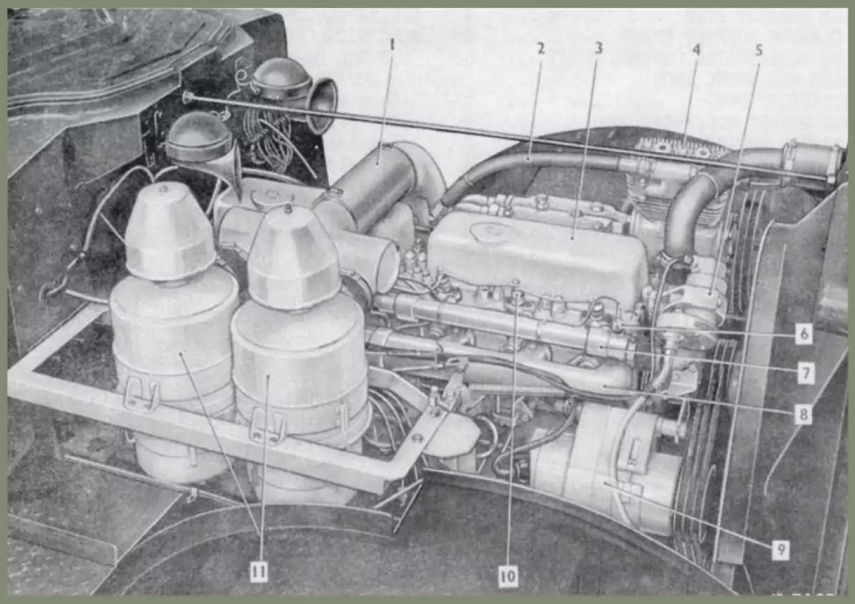
a speedometer, rev counter, fuel-pressure gauge, oil-pressure gauge, water temperature gauge, engine-oil viscometer (intended to indicate the condition of the crankcase lubricant), braking-system air-pressure gauge, and two ammeters, one giving the charge rate of the dynamo, the other indicating the charge rate into the left-hand batteries. The viscometer was removed from those trucks that were fitted with the Rolls-Royce C6NFL engine.

The ballast box was produced by Gar Wood Industries, and consisted of a simple, welded-steel box with steel I-beam cross-members under the floor; the body was attached to timber sills on top of the chassis. There was a tailgate

at the rear, stowage compartments in the rear corners, and compartments at the front to stow the spare wheel and other loose equipment; long grab handles were fitted at the rear of each side. A pintle hook was provided at the rear, and there were air couplings at the front and back of the tractor to connect the tractor to the trailer brakes, and to permit interconnection of the brakes when double-heading.

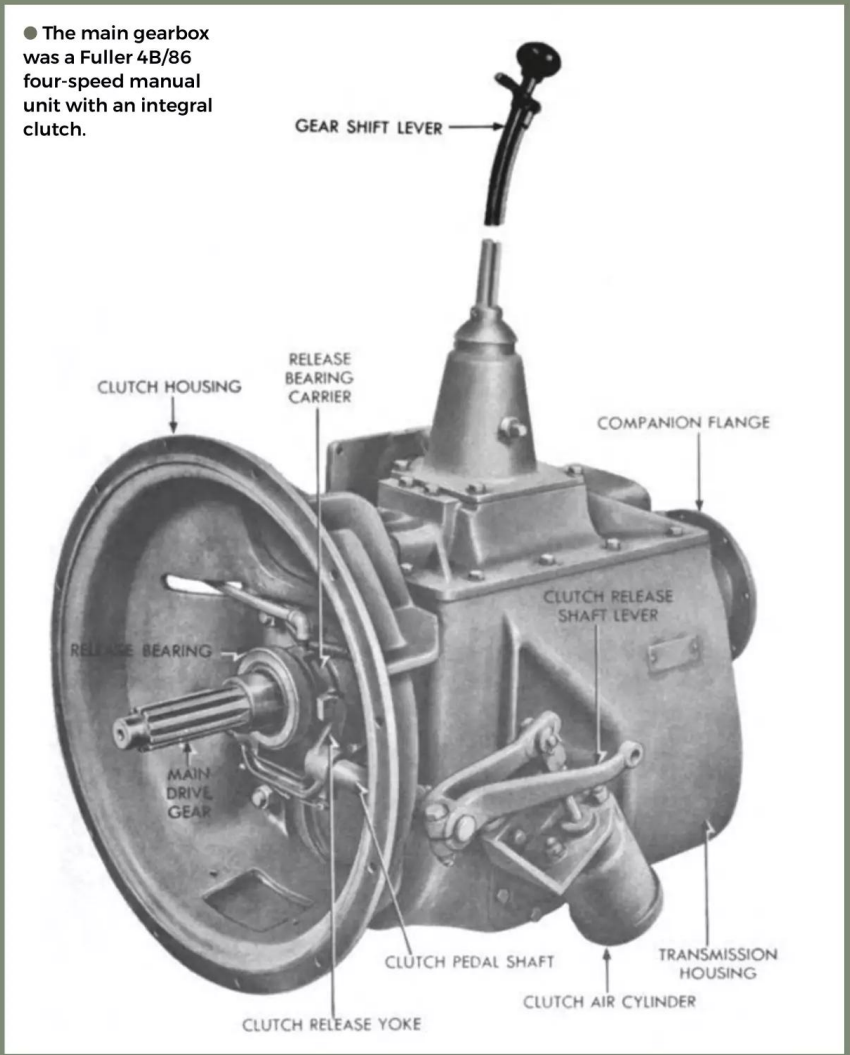
The bulk of the space in the ballast box was used for cast-iron weights. A laden trailer necessitated carrying somewhere between 25,000 and 31,360 lbs (11,363-15,255kg) of ballast in the form of 56 lb (25.5kg) cast weights, to ensure that the driving wheels had sufficient grip. If the 'official' weights were not available, large quantities of concrete, sand or gravel could also be used.

The factory finish was either lustreless Coronado Tan, or lustreless Khaki Green; British tractors were often over-painted with a disruptive-pattern 'Mickey Mouse ears' or random shadow camouflage. During the post-war years, the standard British finish was glossy Deep Bronze Green.



● Right-hand under-bonnet view of the Rolls-Royce C6NFL-143.

1 Air-intake hose
2 Air inlet to compressor
3 Rocker cover
4 Air compressor
5 Tachometer drive
6 Thermometer unit
7 Coolant manifold
8 Exhaust manifold
9 Generator
10 Fuel injector
11 Air cleaners



● The main gearbox was a Fuller 4B/86 four-speed manual unit with an integral clutch.

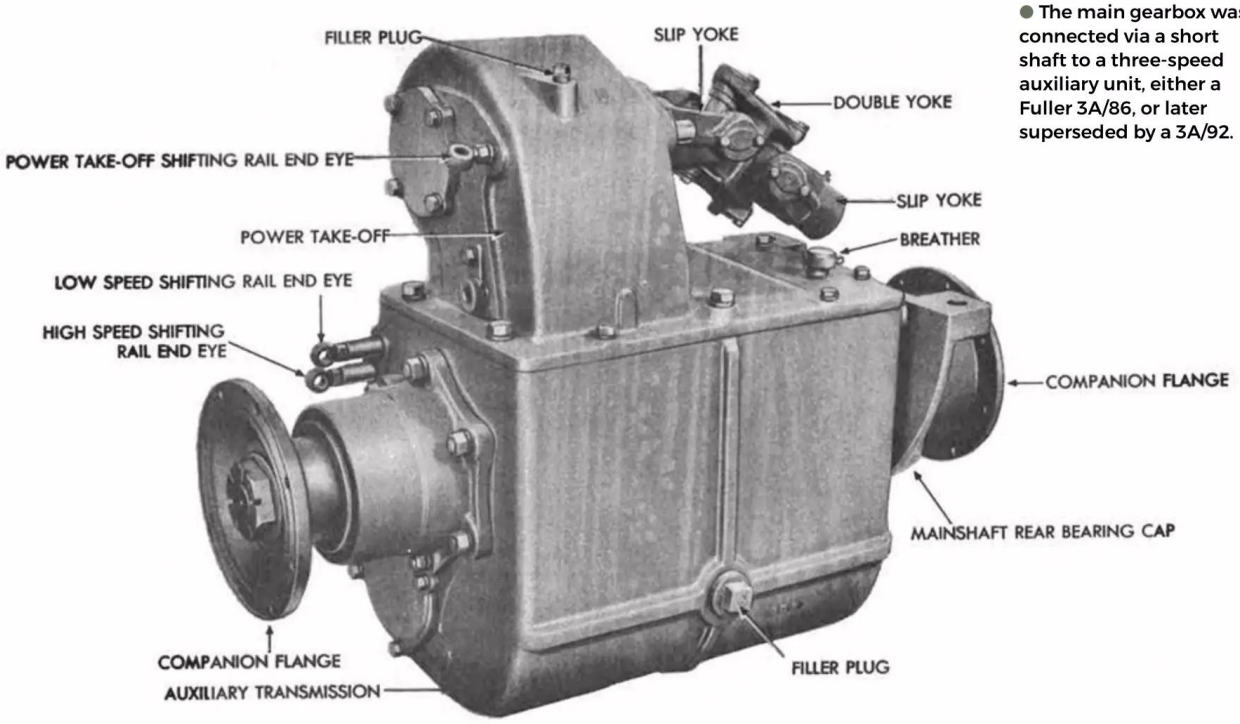
Electrical system

The vehicles were wired on a hybrid 24/12/6V negative-earth system using four 6V batteries, arranged to provide 24V for starting, 12V for charging, and 6V for lighting. The batteries were housed in compartments beneath the cab floor.

Winch

A Fuller 3AX power take-off was mounted on the auxiliary gearbox and connected by roller chain to the winch, a Gar Wood model 5M723B unit rated at a nominal 40,000 lb (18,182kg), with a torque-controlled cut-out. The winch was located behind the cab and was originally controlled by levers inside the cab; from mid-1943, the controls were moved to the winch itself.

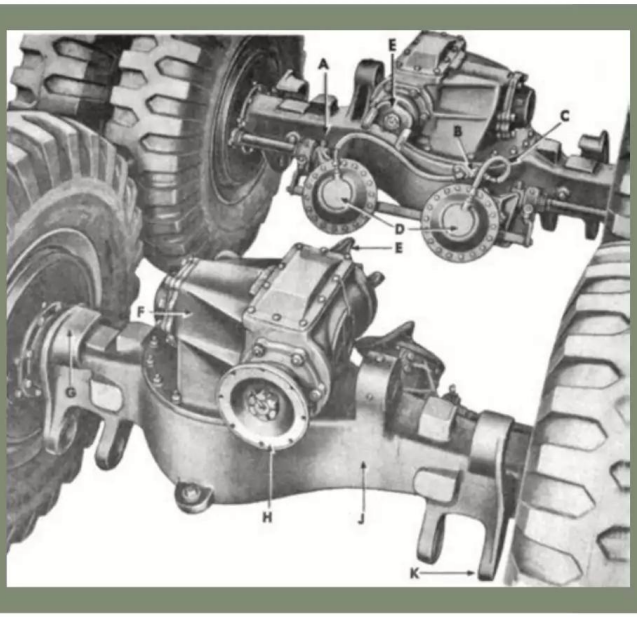
The winch of the original Model 980 carried 300 feet (91.5m) of steel cable, wound onto a 7in (178mm) drum; on the Model 981 recovery variant, the winch cable was 500 feet (152.5m) long. In 1944, Diamond Ts in British service were fitted with pendulum-operated automatic paying-on equipment.



● The main gearbox was connected via a short shaft to a three-speed auxiliary unit, either a Fuller 3A/86, or later superseded by a 3A/92.

● Under-chassis view showing the front axle, steering and suspension.

A Suspension bump stop
B Front spring
C Front-spring clips
D Front-spring clip spacer
E Front axle
F Steering arm
G Drag link



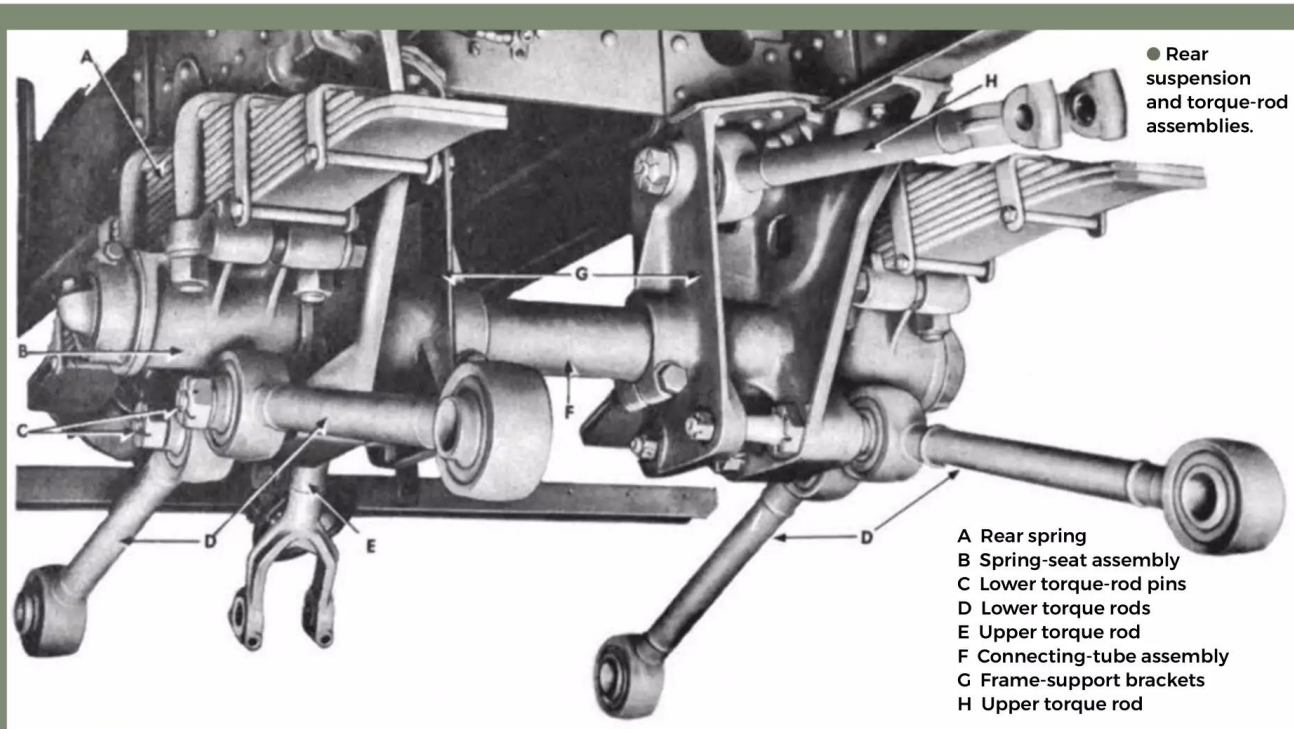
● Rear bogie removed from the vehicle.

A Rearward rear-axle assembly
B Tee
C Flexible air line
D Brake air chambers
E Inter-axle propeller-shaft yokes
F Differential assembly
G Rear spring platform
H Propeller-shaft companion flange for auxiliary transmission
J Forward rear-axle assembly
K Lower torque-rod bracket

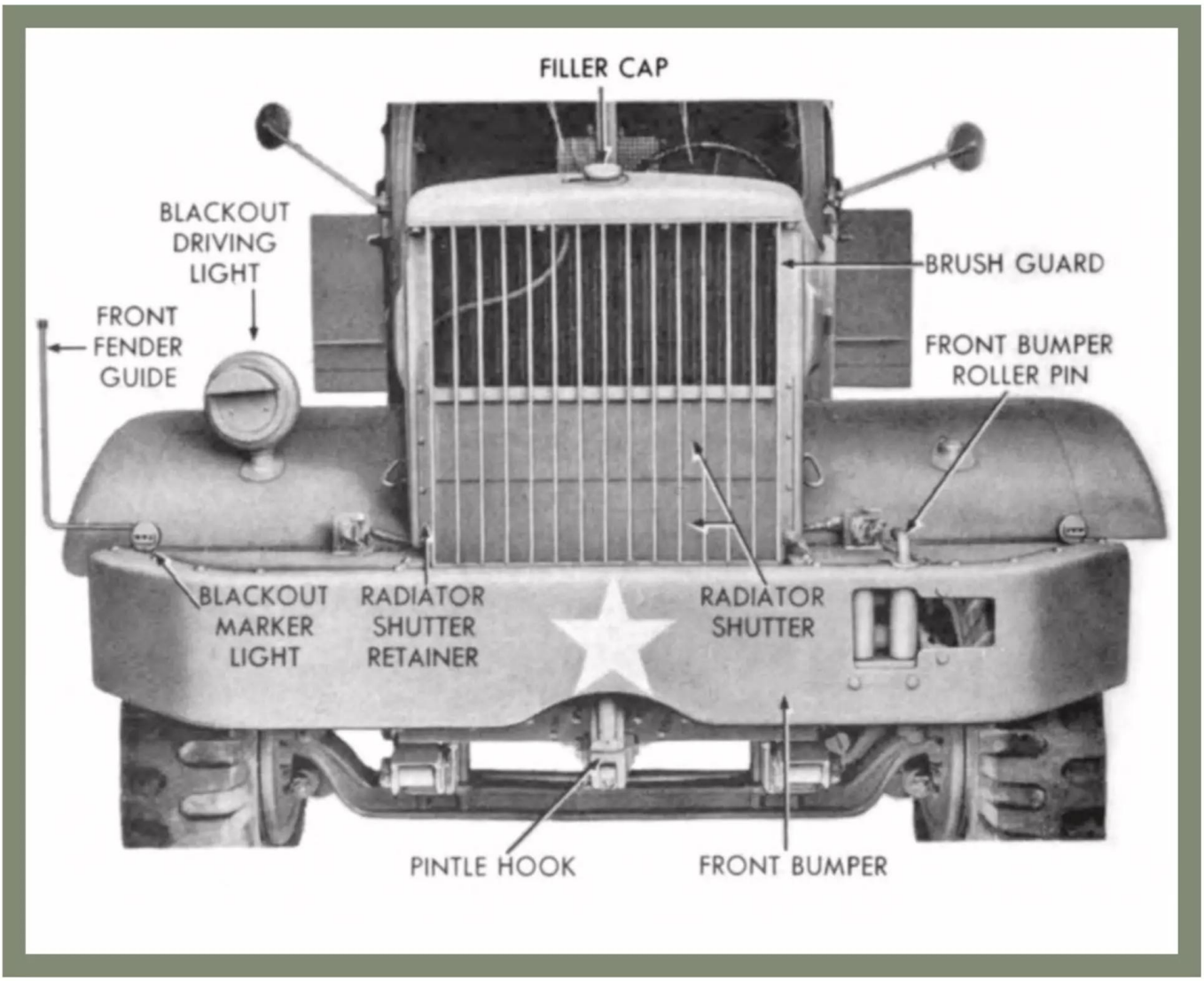
Trailers

All of the tank-transporter drawbar trailers used during WW2 were similar in design, consisting of three axle lines, each having eight wheels mounted in oscillating pairs. The front wheels were mounted on a rotating dolly that was suspended either on short semi-elliptical springs (British trailers), or on coil springs (American trailers), although trailers produced by Winter-Weiss were not fitted with springs. The rear axles were un-sprung, and the oscillating beams were mounted directly to pivot points on the chassis.

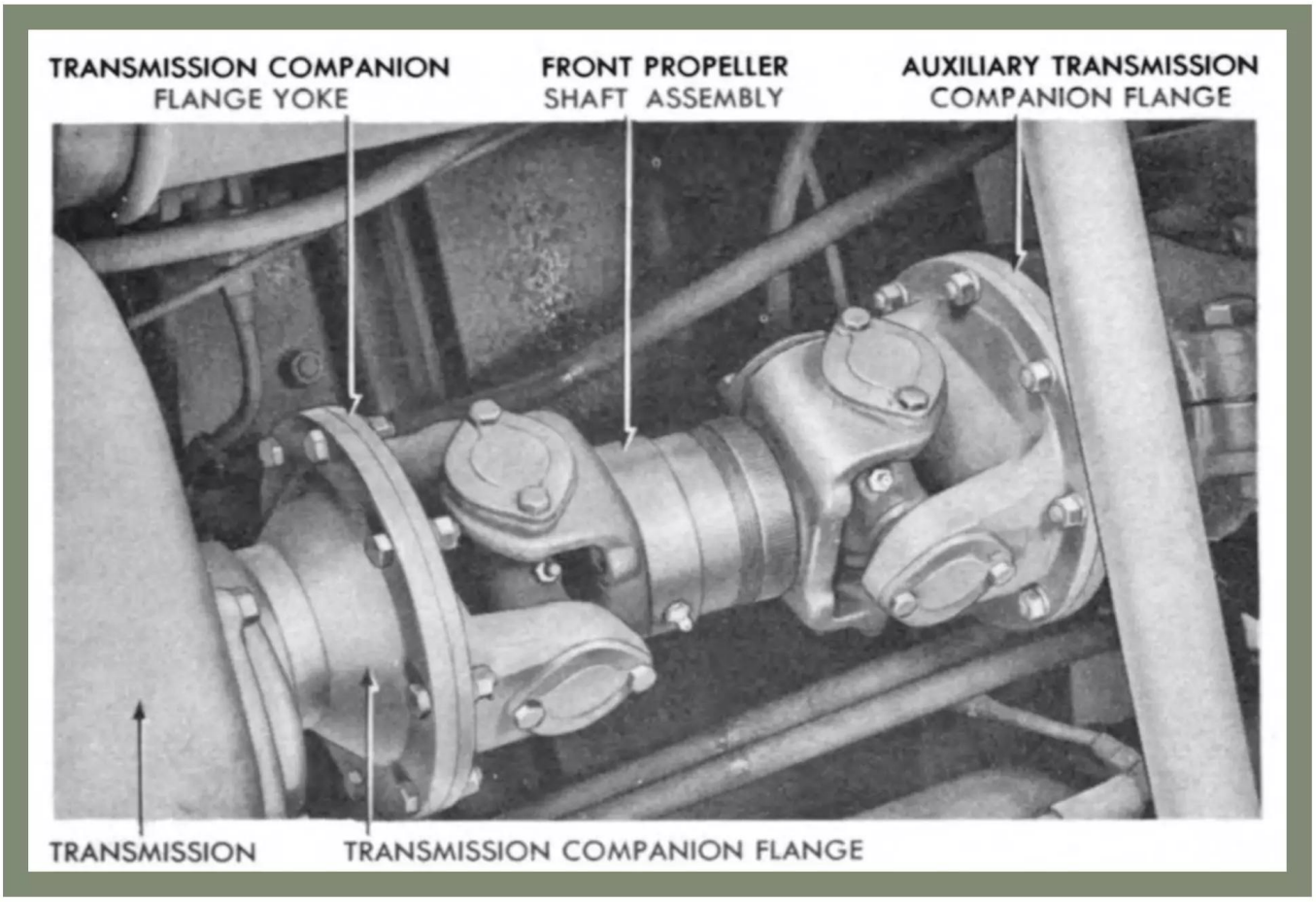
All 24 wheels were provided with air-pressure service and emergency braking systems, combined with a mechanical parking brake. Two spare wheels were



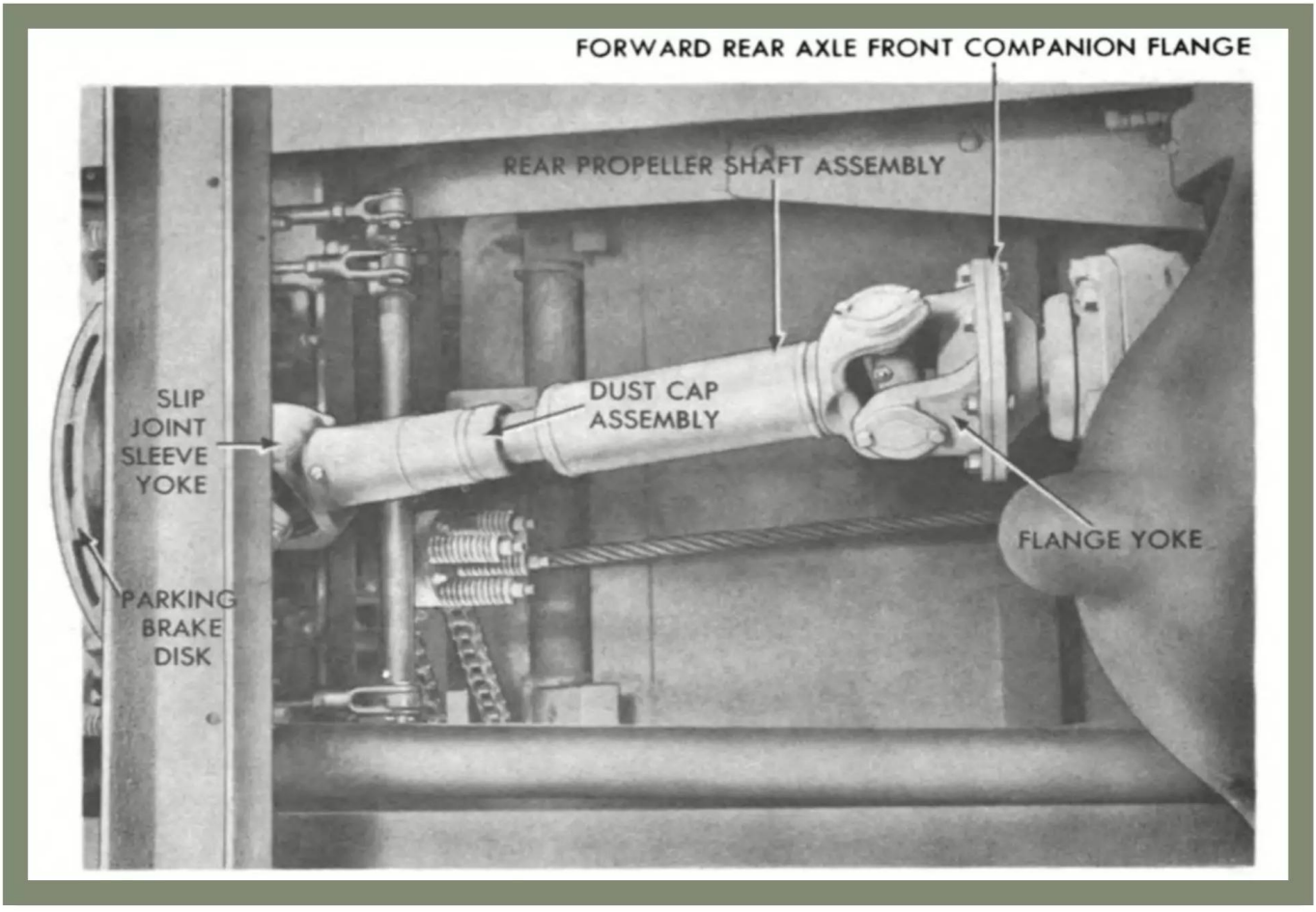
● Rear suspension and torque-rod assemblies.



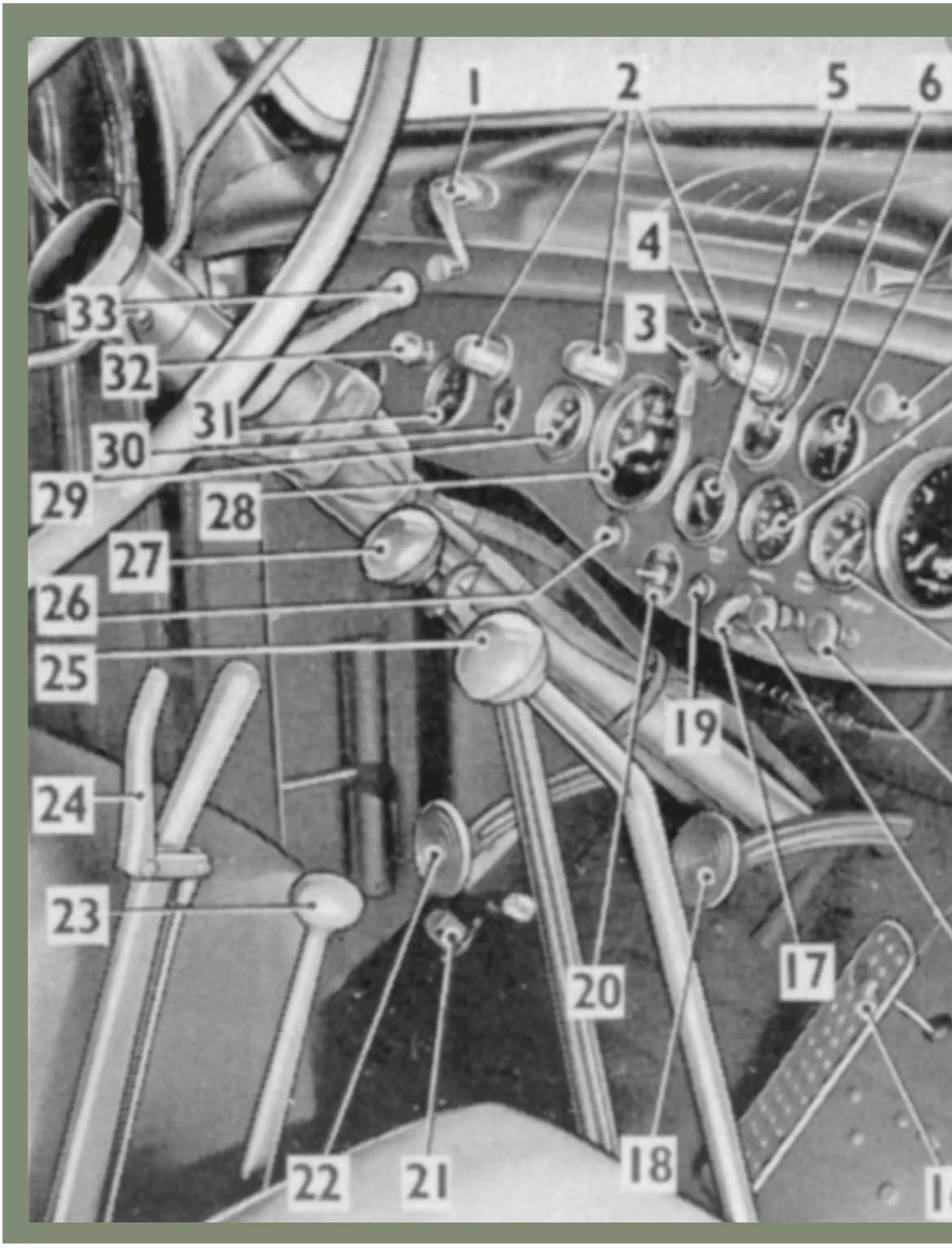
● Front view of truck (Model 981) showing features such as radiator, bumper and lighting equipment.



● Propeller shaft connecting the main and auxiliary gearboxes.



● Rear propeller shaft, viewed from underneath.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● Cab controls of the Rolls-Royce engined truck; the viscometer, which was placed to the left of the tachometer, has been removed

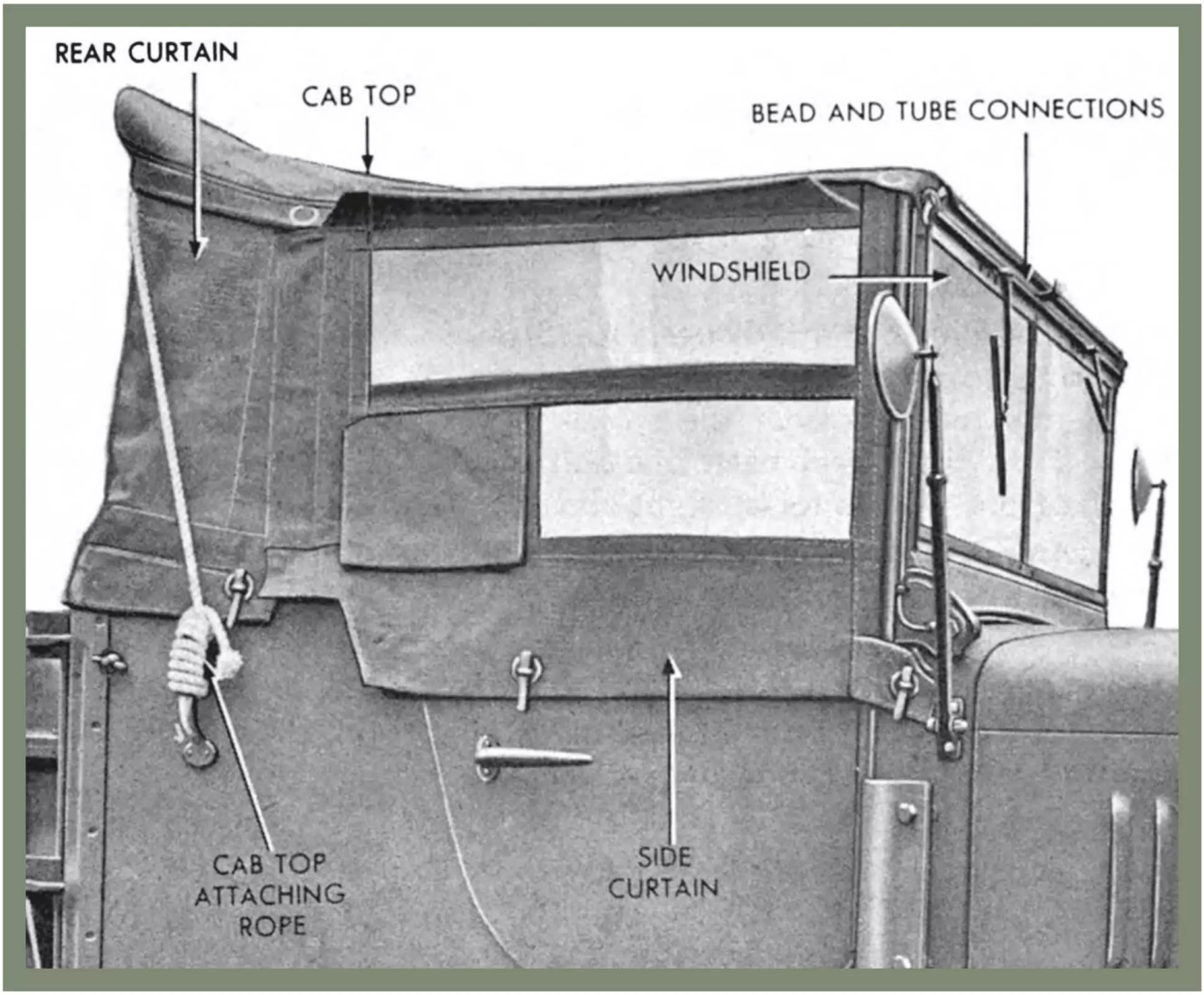
1 Left-hand windscreen opener
2 Panel lights
3 Semi-rotary light switch
4 Light-switch latch
5 Fuel gauge
6 'A' circuit ammeter
7 'B' circuit ammeter
8 Right-hand windscreen opener
9 Panel-lights switch
10 Oil-pressure gauge
11 Right-hand windscreen wiper control
12 Tachometer
13 Water-temperature gauge
14 Hand throttle control
15 Stop-light isolating switch
16 Accelerator pedal
17 Circuit lock switch
18 Footbrake pedal
19 Engine stop switch
20 Fuel-gauge change-over switch
21 Dip switch
22 Clutch pedal
23 Power take-off lever
24 Winch brake lever
25 Auxiliary gear lever
26 Blanking plate (in place of tachometer lock)
27 Main gear lever
28 Speedometer
29 Air-pressure gauge
30 Inspection-light socket
31 Fuel-pressure gauge
32 Left-hand windscreen wiper control
33 Trailer-brake hand control

carried under the deck. The trailer deck was of welded-steel construction, and there were folding ramps at the rear permitting the tank to be loaded, either under its own power or by means of the tractor winch, with guides and rollers fitted to the trailer. Tie-down points and chocks were provided at front and rear to secure the load to the trailer during transport, and both British and American trailers were provided with tool lockers.

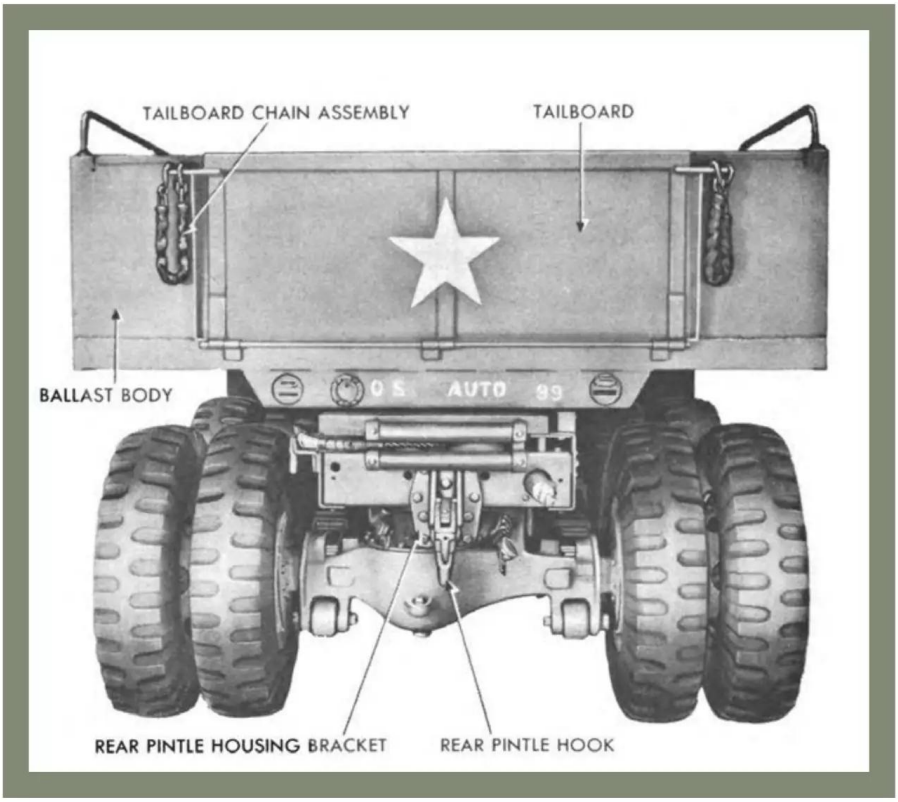
A number of British Mk 2 trailers were modified to allow them to carry the 45-ton tracked trailer, without affecting the ability of the trailer to carry a normal load. Unmodified trailers could also be used to haul the 45-ton tracked trailer, but not with the same degree of safety and speed in transit.

In the post-war years, the British Army's FV3601 50-ton trailer was also used in conjunction with the Diamond T. Ultimately produced in three marks, it was similar in design and construction to the British wartime trailers, but had a wider deck and was fitted with an additional axle line giving 32 wheels.

● Good side elevation of the steel cab. Generally termed a 'bivvy', the tarpaulin-covered enclosure over the ballast box was overnight accommodation for the crew of the truck; this was not a feature generally seen on US Army trucks.



● With its curious steel half-doors, the open cab, with canvas top and side curtains, was adopted from August 1943.



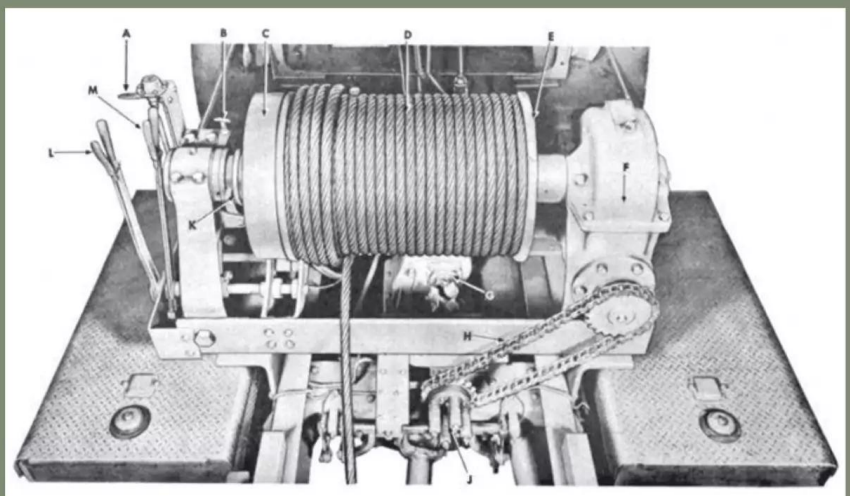
● More naming of parts... this time at the rear.

Semi-trailers

Running on eight un-sprung wheels, mounted on oscillating beams, and arranged as two axle lines, the Shelvoke & Drewry 30-ton semi-trailer was similar in design to the semi-trailer of the Scammell Pioneer. It was designed to be permanently coupled to the tractor via a Scammell-type fifth wheel – or turntable – and consisted of a welded-steel chassis with full-length steel trackways to support the load. The lack of outer guide rails allowed the trailer to carry oversized loads. At the rear, there were spring-counterbalanced ramps, and a single spare wheel was carried.

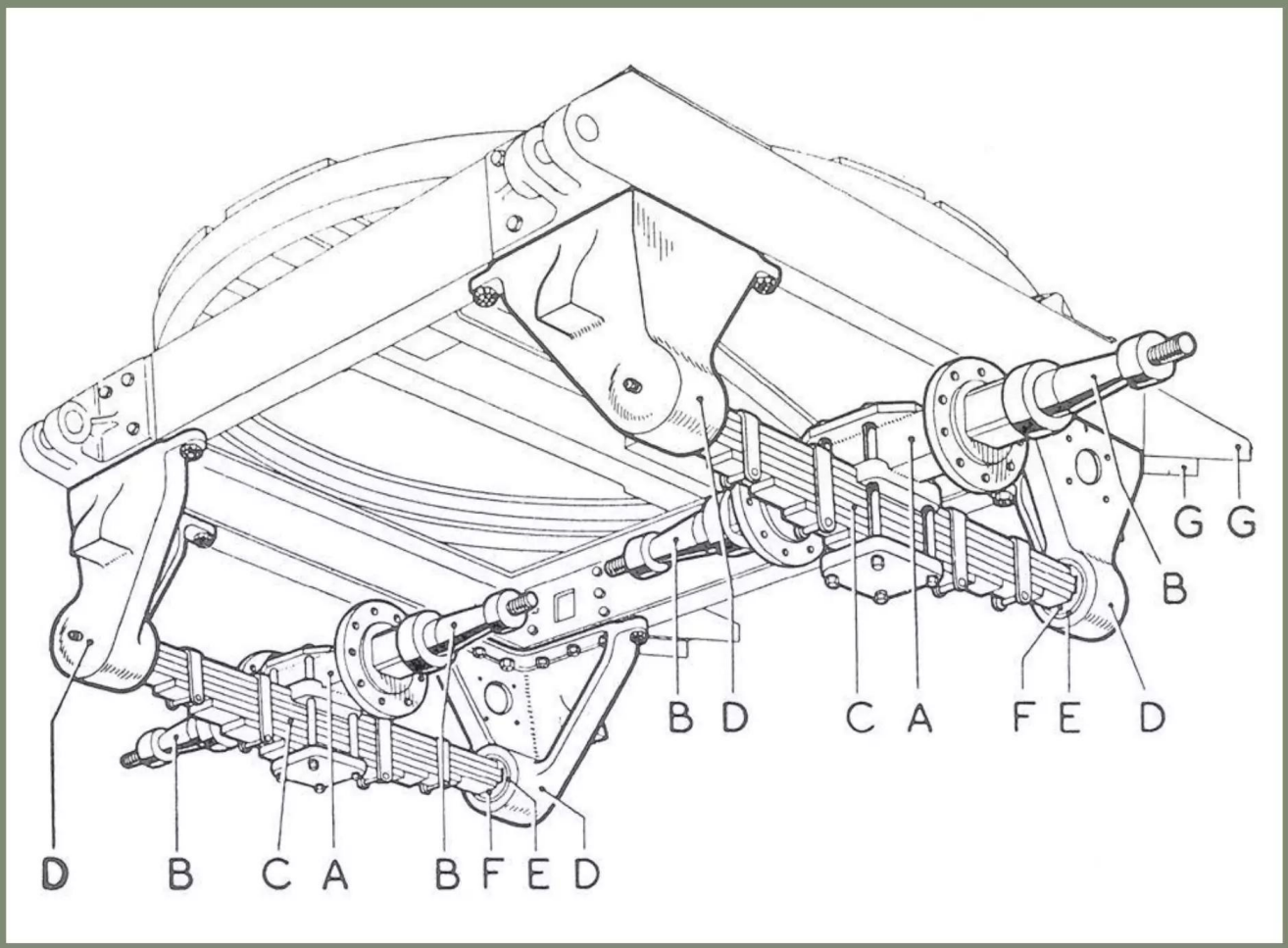
A Diamond T tractor that had been converted to run with a semi-trailer could be easily converted back to its original ballast-bodied configuration.

● On early production vehicles, the winch controls were inside the cab. From mid-1943, the controls were moved to the winch itself.



● The winch was a Gar Wood model 5M723B unit rated at a nominal 40,000 lb (18,182kg), with a torque-controlled cut-out.

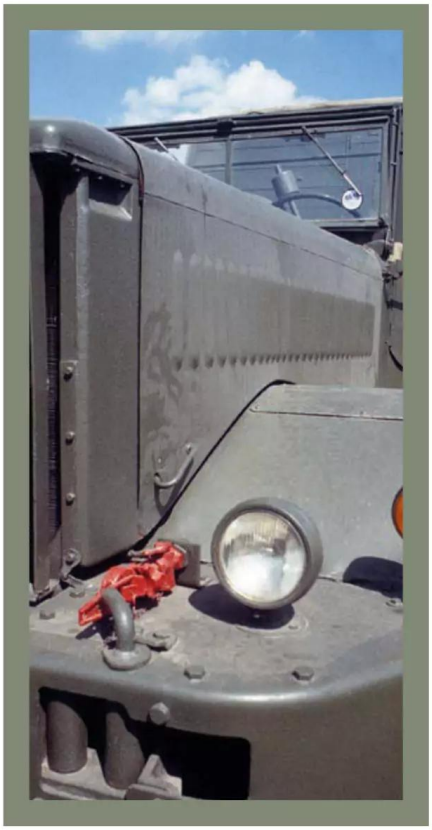
A Clutch hand control
B Throttle hand control
C Winch brake band
D Winch cable
E Winch drum
F Worm-gear casing
G Winch propeller shaft
H Drive chain
J Torque-control assembly
K Clutch shift yoke
L Winch clutch control lever
M Winch brake lever



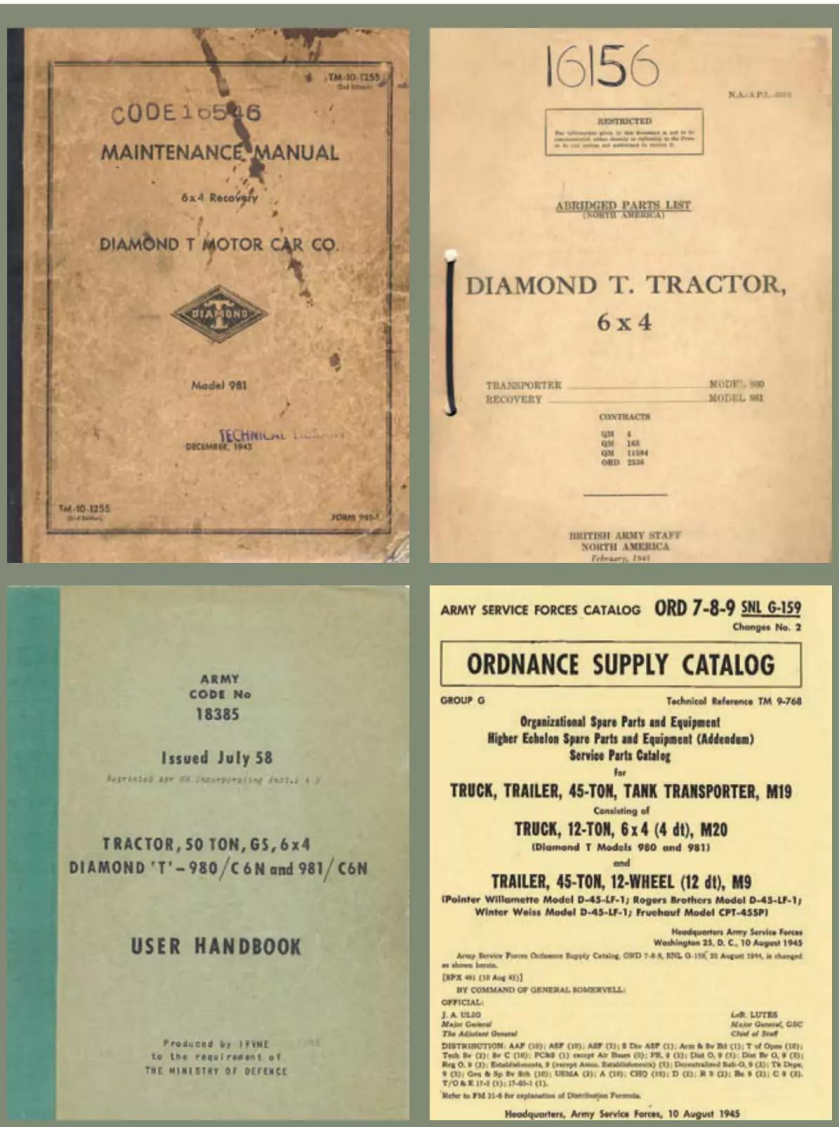
● The drawbar trailer was carried on a rotating dolly at the front end, with British-built trailers supported by leaf springs, and US-built trailers supported on coil springs: note that trailers built by Winter-Weiss had no springs.

A Trailer axles, each carrying two twin wheels
B Axle extensions
C Semi-elliptical springs
D Bearing housing for spring
E Bearing-housing bush
F Gudgeon pins, allowing the axle to oscillate

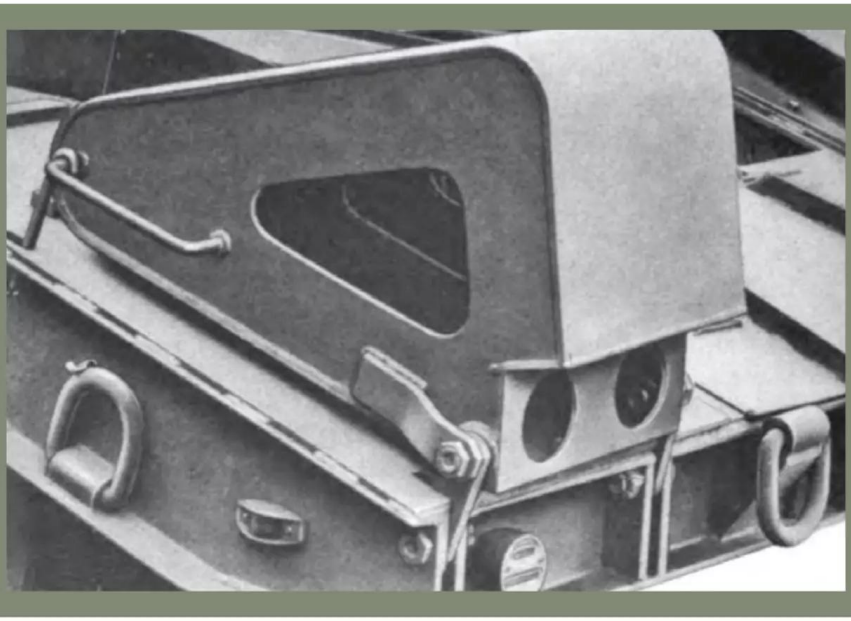
● The big Gar Wood winch was located immediately behind the cab and was chain driven from a Fuller 3AX power take-off on the transmission. In 1944, Diamond Ts in British service were fitted with pendulum-operated automatic paying-on equipment.



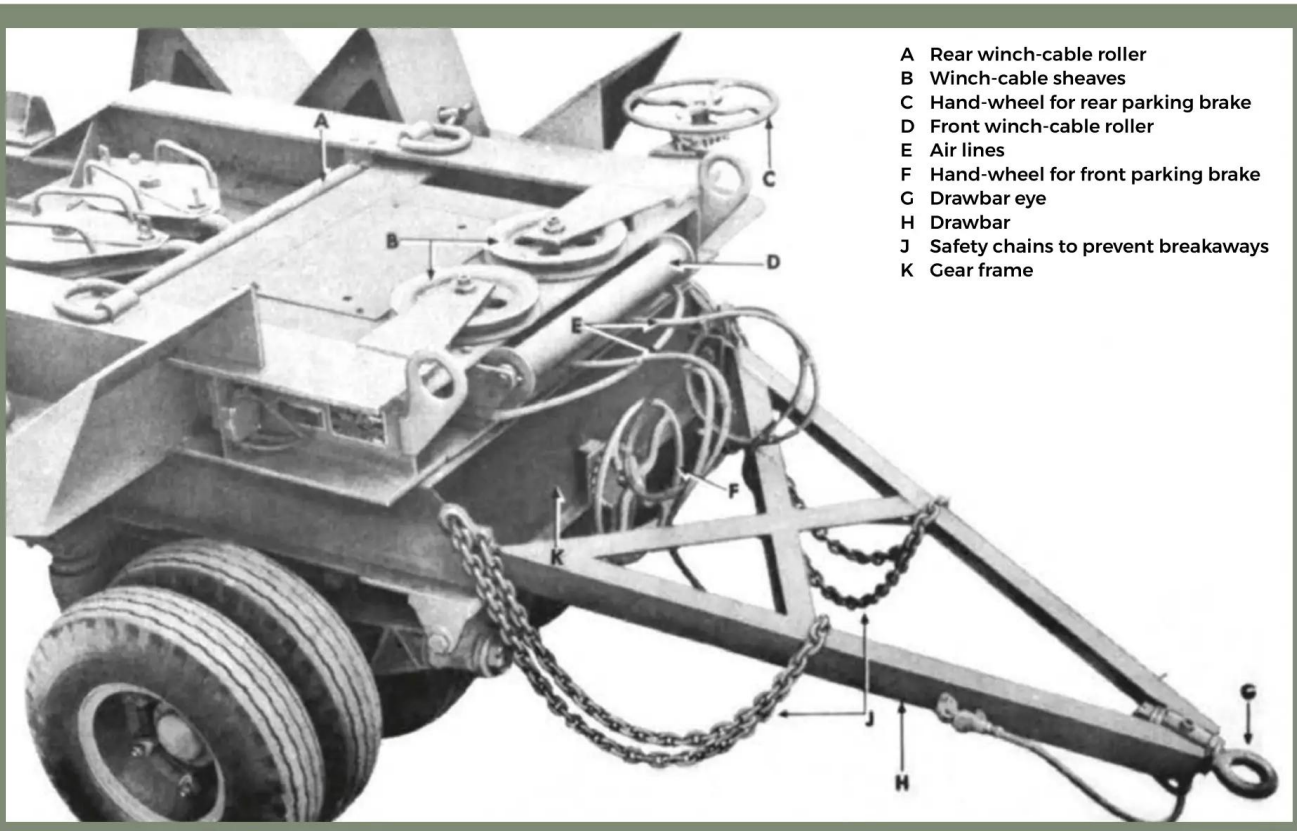
● On the original Model 980, the winch carried 300 feet (91.5m) of steel cable, whereas on the Model 981 recovery variant, shown here, there was 500 feet (152.5m) of cable and fairlead rollers were built into the front bumper.



● Collection of Diamond T literature, including the second edition of the manufacturer's original maintenance manual (dated 1943), the official British and US Army parts lists, both dated 1945, and the user handbook produced for the Rolls-Royce engined tractor in 1958.



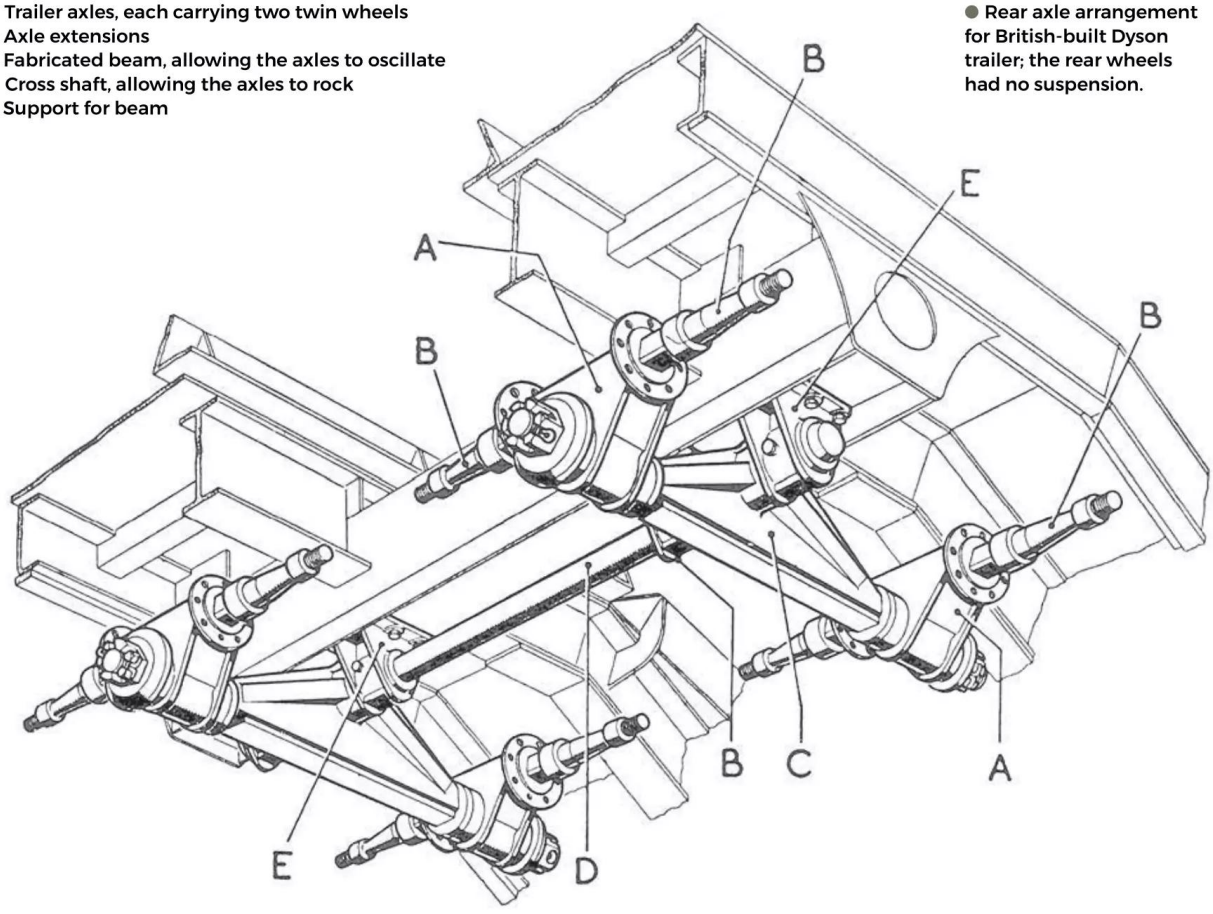
● Typical hinged loading ramp, in this case on the Rogers trailer.



A Rear winch-cable roller
B Winch-cable sheaves
C Hand-wheel for rear parking brake
D Front winch-cable roller
E Air lines
F Hand-wheel for front parking brake
G Drawbar eye
H Drawbar
J Safety chains to prevent breakaways
K Gear frame

● Front end of the US-built Rogers trailer.

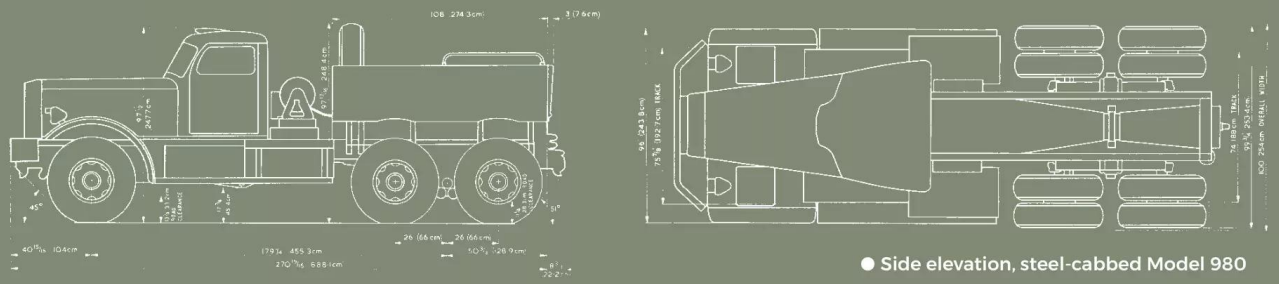
A Trailer axles, each carrying two twin wheels
B Axle extensions
C Fabricated beam, allowing the axles to oscillate
D Cross shaft, allowing the axles to rock
E Support for beam



● Rear axle arrangement for British-built Dyson trailer; the rear wheels had no suspension.

FACTS & FIGURES - DIAMOND T MODELS 980 AND 981

	Hercules DFXE engine		Rolls-Royce C6NFL-143 engine	
Cylinders	6	6	6	6
Capacity	14,634cc	855in³	12,170cc	743in³
Bore and stroke	5.625 x 6in	142.9 x 152mm	5.125 x 6in	130.1 x 152mm
Fuel	diesel oil	diesel oil	diesel oil	diesel oil
Power output	201bhp	150kW	175bhp	130kW
Maximum torque	685 lbf/ft	929Nm	490 lbf/ft	664Nm
Dimensions and weight				
Overall length				
tractor only	279in	7092mm	279in	7092mm
with semi-trailer	598in	15,189mm	'116in	2946mm
Overall width				
tractor only	100in	2540mm	100in	2540in
with semi-trailer	116in	2946mm	116in	2946mm
Height				
to top of closed cab	98in	2477mm	98in	2477mm
to top of open cab	102in	2591mm	102in	2591mm
Wheelbase, tractor	179in	4553mm	179in	4553mm
Bogie centres	52in	1321mm	52in	1321mm
Ground clearance, under rear axle	11in	280mm	11in	280mm
Turning circle				
left	72ft	21.88m	81ft	19.83m
right	65ft	19,83m	81ft	19.83m
Weight				
unladen, tractor, closed cab	11.95 ton	12.14 tonne	11.95 ton	12.14 tonne
unladen, tractor, open cab	11.81 ton	12.02 tonne	11.81 ton	12.02 tonne
unladen, with semi-trailer	29.51-29.65 ton	30.07-30.19 tonne	-	-
Maximum permissible laden weight				
front axle	4.9 ton	4.99 tonne	4.9 ton	4.99 tonne
rear axle	18 ton	18.25 tonne	18 ton	18.25 tonne
semi-trailer	30.3 ton	30.85 tonne	-	-
Maximum towed load	51.34 ton	52.27 tonne	51.34 ton	52.27 tonne
Gross train weight				
drawbar trailer	79.50 ton	80.95 tonne	91.25 tons	92.9 tonne
semi-trailer	64.94 ton	66.12 tonne	-	-
Performance				
Fuel consumption	4mpg	1.7km/litre	3.5mpg	1.24km/litre
Maximum speed, solo				
first gear, low ratio	1.5mph	2.5km/h	2mph	3.2km/h
first gear, direct	3.1mph	5km/h	4mph	6.4km/h
first gear, high ratio	4mph	6.5km/h	5.3mph	8.6km/h
fourth gear, high ratio	23mph	37km/h	29mph	46.6km/h
Maximum grade, with trailer and load				
first gear, low ratio	1 in 5	25%	1 in 8	12.5%



● Side elevation, steel-cabbed Model 980

DIAMONDS IN THE ROUGH

From the Western Desert to D-Day and beyond

To quote the words of the War Office... 'the 40-ton tank transporter is included in the establishments of recovery companies, line of communication recovery companies, armoured brigade workshops (Type B), advanced base workshops, base tank workshops, infantry brigade workshops, and command workshops'.

● Nicknamed 'Malcolm', this closed-cab Model 981, coupled to a Dyson 40-ton trailer, is involved in a training exercise. The tractor was supplied under contract SM2059.

In essence, the role of a tank transporter is to deliver tanks, and other tracked vehicles, to the battlefield, or as close as is possible; to deliver tanks from, for example, the place of manufacture or repair to a vehicle reserve depot; and to recover disabled tanks and return them to workshops for repair. The first two roles fall under the remit of the Royal Army Service Corps (RASC), whilst the third, recovery role, falls to the Royal Electrical & Mechanical Engineers (REME).

In practice, at least during the latter years of the war, these two roles were

● Judging by the 40-gallon (180 litre) barrel lashed on top of the right-hand fuel tank, this Model 980 is in for a long ride. It was common practice for the tank crew to ride with the transporter.

not quite as separate as might be imagined because it was laid down that 'no transporter will return empty from forward areas if a backload is available'. This meant that REME and the RASC would effectively take on aspects of each other's roles under certain conditions, in order to avoid running empty, although it was a while before the organisation for the recovery of tank casualties was sufficiently developed to avoid RASC crews having 'to go round the desert looking for them'!

Production of the Diamond T Model 980 started in mid-1941, and continued throughout the war. The first examples were delivered to North Africa early the following year, where the tractor immediately started to replace the Scammell Pioneer and, at the same time, allowed an increase in tank transporter companies to match the Army's growing strength in armour. Sadly, this was not a situation that could continue for long, because, in August 1942, the US Army realised that it, too, had a need for tank transporters and 'borrowed' an initial 200 vehicles that had been intended for Britain. This was followed, in 1944, by a further 114 tractors... leading to complaints that the USA was taking too many vehicles at the expense of Britain! By the end of the war, the USA had taken more than half of the total number of vehicles produced.

Crew

The Diamond T was operated by a crew of two, with one man in charge of driving the vehicle and of carrying out routine maintenance and running checks during 'halts'. The second crew member was responsible for the trailer. The crew was expected to remain with the transporter overnight, sleeping either in the cab, under the truck, or in the ballast box, where increasingly-elaborate shelters were often erected to provide weather protection.

Providing the tank was mobile, an experienced crew could complete the entire loading or unloading procedure in 10-15 minutes. If the tank was disabled, all bets were off, and it could take as long as five hours to load one in this condition, with particular difficulties

Diamond T *"tank-movers"* speed desert warfare

THIS grim Diamond T in "war paint" is *your* truck. It's in the fight for Liberty, for you and all of us. Enormous Diamond T diesel six-wheelers such as this, with gross truck and trailer capacity of nearly *a hundred tons,* move massive army tanks at high speeds—forward to combat zones or back for repairs.

When Victory is won, men who are now battling in far places can tell you many a tale of how well these and other types of Diamond T Trucks served them.

Meanwhile, all your patience and ingenuity and care are called upon. The new trucks that you may need are not to be had. Your veteran Diamond T Trucks have got to last —to stay on the job—to clothe and feed and safeguard civilian life and health. That means they've got to be cared for skillfully and systematically.

To this end, your Diamond T dealer is ready to give you cooperation that isn't conversation. The Diamond T Life Extension Lubrication and Inspection Service—backed and sealed by the solemn Victory Pledge of Driver, Dealer, and Owner, is ready to cover every Diamond T you operate. It's truly "truck fitness assurance." It's for the duration. It's a real American answer to a problem that's tough for all of us. And every Diamond T dealer is at your service.

Diamond T Motor Car Company
Chicago, Illinois
Established 1905

Buy United States Bonds! They'll pay the costs of Victory...pay you back in Liberty...with interest!

DIAMOND T
Trucks

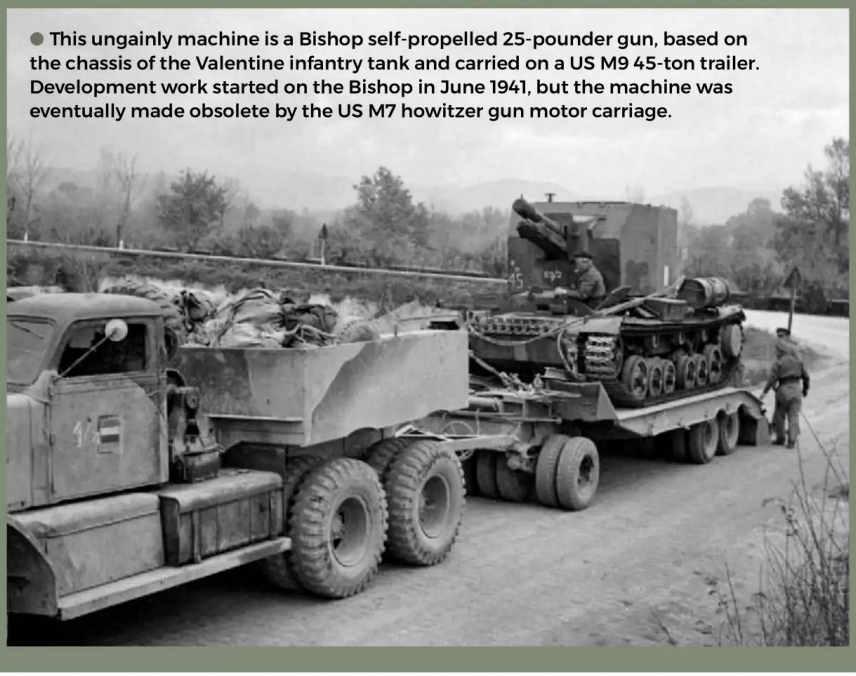
● This Diamond T corporate advertisement, extolling the virtues of the company's 'tank movers', appeared in the '*Saturday Evening Post*', dated 6 January 1942.

● Somewhere in England'... just a few of dozens of Royal Canadian Army Service Corps (RCASC) Diamond T tractors parked-up and awaiting issue.

experienced when the tank had seized tracks.

Road driving required a degree of skill and the outfit was more than a handful in difficult conditions. In ice, snow and mud it was certainly no easy business. All kinds of problems could arise, including loss of adhesion on the tractor driving wheels resulting in wheel spin, jack-knifing and sideslip of the trailer, and a bull-dozer effect on loose material ahead of the front line of trailer wheels. Poor weather could also give rise to a number of problems including frequent icing of the windscreen, and difficulties with visibility due to the length of the bonnet, calling for particular care when driving on ice- or snow-bound roads.

When running in convoy, the vehicles maintained a distance of about 180 feet (54m) between trucks.



● This ungainly machine is a Bishop self-propelled 25-pounder gun, based on the chassis of the Valentine infantry tank and carried on a US M9 45-ton trailer. Development work started on the Bishop in June 1941, but the machine was eventually made obsolete by the US M7 howitzer gun motor carriage.

● Unusual loads 1... the US Army modified a number of semi-trailers to permit them to be loaded with ammunition or other dense stores.

● M3 Stuart light tank, missing the left-hand track, being winched onto an M9 45-ton trailer.

Punctures were a continual problem... particularly when carrying the heaviest tanks. Inevitably it would be one of the inside tyres on the trailer, the ones that are hardest to get at. But a halt to repair or replace a blown tyre was always welcome... and, there are apocryphal stories of tank crews being carried along with their disabled tank shooting at the trailer tyres to enforce a meal break!

Loading and unloading

The loading procedure is perfectly straightforward. Firstly, the tractor and trailer need to be on level ground and in line with each other, and with the vehicle to be loaded. The brakes on both the tractor and trailer must be applied. The loading ramps need to be lowered and, where applicable, the inner track guides set to accommodate the track width of the vehicle to be carried.

Next, the Hollebone yoke is attached to the tank and the snatch block attached to the yoke; tanks with a single, central towing eye at the front, for example the Churchill, did not need the Hollebone yoke. The tank is then carefully driven, or winched, forward onto the trailer until the two snatch blocks meet. If the tank starts to move out of line on the trailer, it must be returned to the ground and straightened up: it is not advisable to correct the trajectory of the tank once it was on the trailer.

The tackle is then removed and the tank winched or driven forward until it reaches the forward stops where it is shackled to the front of the trailer. Chocks are placed behind each track and, using the rear strainers, the tank is securely lashed to the trailer.

Unloading is generally the reverse of this procedure always providing that the tank was able to move under its own power.

Disabled tanks need to be steadied by the winch of the tow vehicle whilst being winched slowly off the trailer using a second tractor.

Diamond T in the Western Desert

The first Diamond T tractors to see service were delivered to Montgomery's 8th Army in North Africa. Over a seven-month period, a total of 393 tractors and trailers were assigned to Numbers 15, 143, 144, 372 and 373 Tank Transporter Companies, with each company having 17 or 34 vehicles. By early September 1942, records disclose that 272 'Diamond Tee' tractor/trailer combinations – or 'trains' in military parlance – were in use, with a further 121 either disabled by enemy action or awaiting repair, assembly or issue.

At first they were well received, behaving very well in what were harsh and testing conditions. But, not everyone was happy and eventually there was criticism levelled at the tractors. For example, for exhibiting excessive wheel spin in soft sand, for their poor hill climbing performance, and for an overall lack of speed. One writer from Number 34 Company believed, probably wrongly, that the old Scammell Pioneer would have provided better performance. The problems with wheel spin were solved by fitting tracks from the German Mk IV tanks to the

● The streaks of oil and fuel, together with the damage to the cab and the fact that the ballast box is missing, suggest that this Model 980, belonging to either 18 or 226 Tank Transporter Company, has been rolled onto its side, possibly as a result of the driver falling asleep at the wheel.

● This steel-cabbed Diamond T bears a post-war registration number (23YZ24), and the presence of so many hat-wearing onlookers suggest that this is some kind of trial. Note how the tractor has a large 'A' frame bolted to the rear to allow it to be used for double-heading. The tank is an M4 Sherman DD (duplex drive) with the wading screen in place.

● The brick road surfacing and the style of the buildings suggest that this photograph was taken in either Belgium or the Netherlands. The convoy is British, but the US-built M9 trailers are loaded with American Buffalo tracked landing vehicles (LVT4).

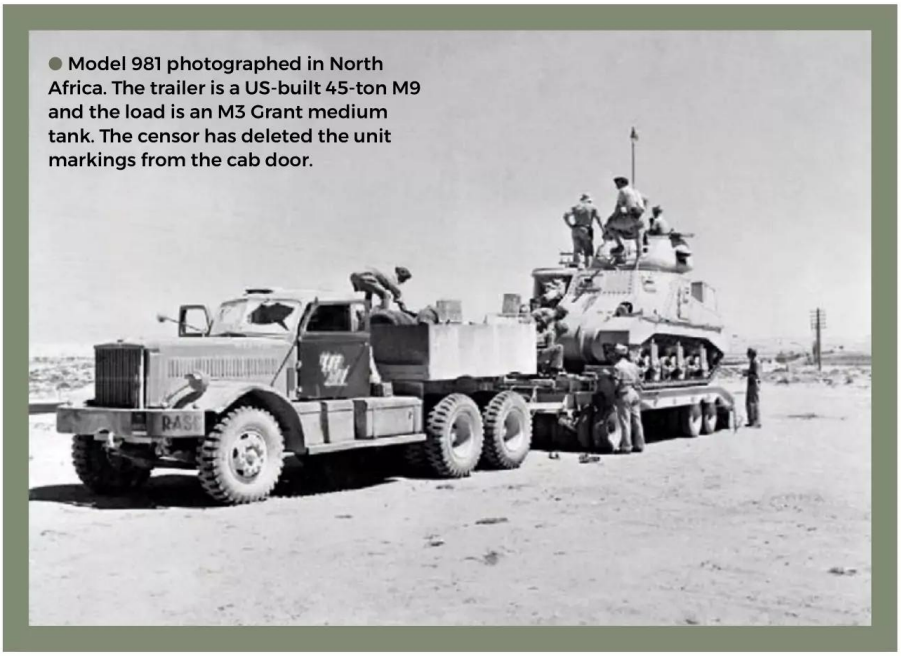
rear wheels... by the end of the battle of Alamein it is said that every Diamond T used by REME had a set of such tracks either fitted or loaded in the body as ballast.

The trailers came in for some criticism too. On the road, the performance was fine, providing the trailer was not overloaded, but, off the road, loose soil tended to pile up in front of the wheels causing difficulties.

Nevertheless, it is not difficult to find examples of sterling service. For example, the tractor excelled itself in February 1943 when Number 534 Company with only 14 trains available, moved 12 tanks belonging to Number 25 Tank Brigade from Philippeville to Bone. The ultimate destination was Le Kef and by 2 March, 185 Churchills had been delivered, with the transporters struggling up through the mountains at little more than 4mph (6.5km/h). In another instance, tank-transporter crews worked 60 hours at a stretch, loading and unloading 8th Army tanks from Tripoli to Medenine to join the battle with Rommel.

Since the 65 Diamond Ts had been landed in Africa, they had averaged 9850 miles (15,957km) each, and the aggregate mileages of the tractors stood at 618,464 miles (1,001,912km). Failures were few and far between, the most noteworthy consisting of 11 cracked cylinder heads, broken fuel injector shafts, and broken trailer rocker bearings... causing four wheels to fall off!

● Clearly the crew of this Model 980, nicknamed 'Hot Rhythm', are enthusiasts of jazz, as well as being dog lovers! The photograph was taken in Italy.

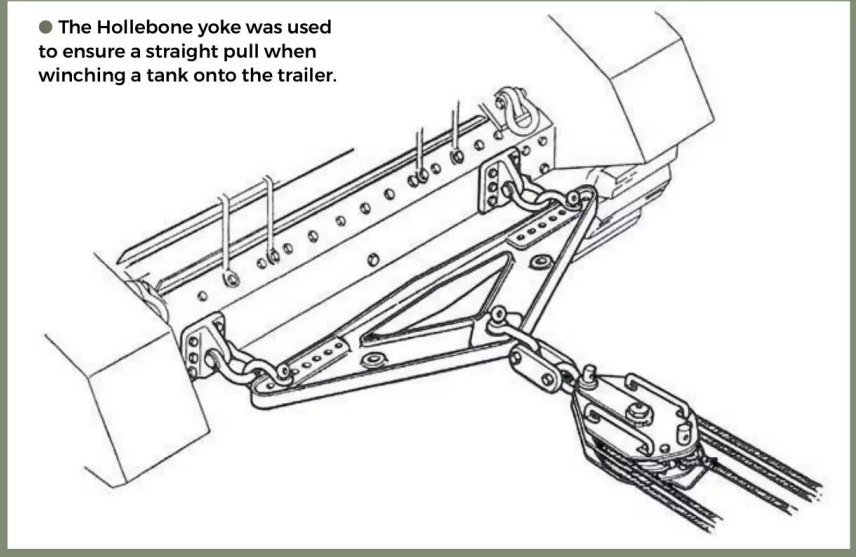


● Model 981 photographed in North Africa. The trailer is a US-built 45-ton M9 and the load is an M3 Grant medium tank. The censor has deleted the unit markings from the cab door.

...in Burma

At the end of 1942, two artillery companies were used to form four mixed British and Indian tank-transporter companies – Numbers 553, 554, 589 and 590. Three of these units worked with the 14th Army, conveying replacement tanks over a line of communication some 300-400 miles (500-650km) long.

The movement of tanks on transporters was vital to preserve track mileage, at least until the River Irrawaddy was crossed... and this didn't happen until February 1945. At one



● The Hollebone yoke was used to ensure a straight pull when winching a tank onto the trailer.

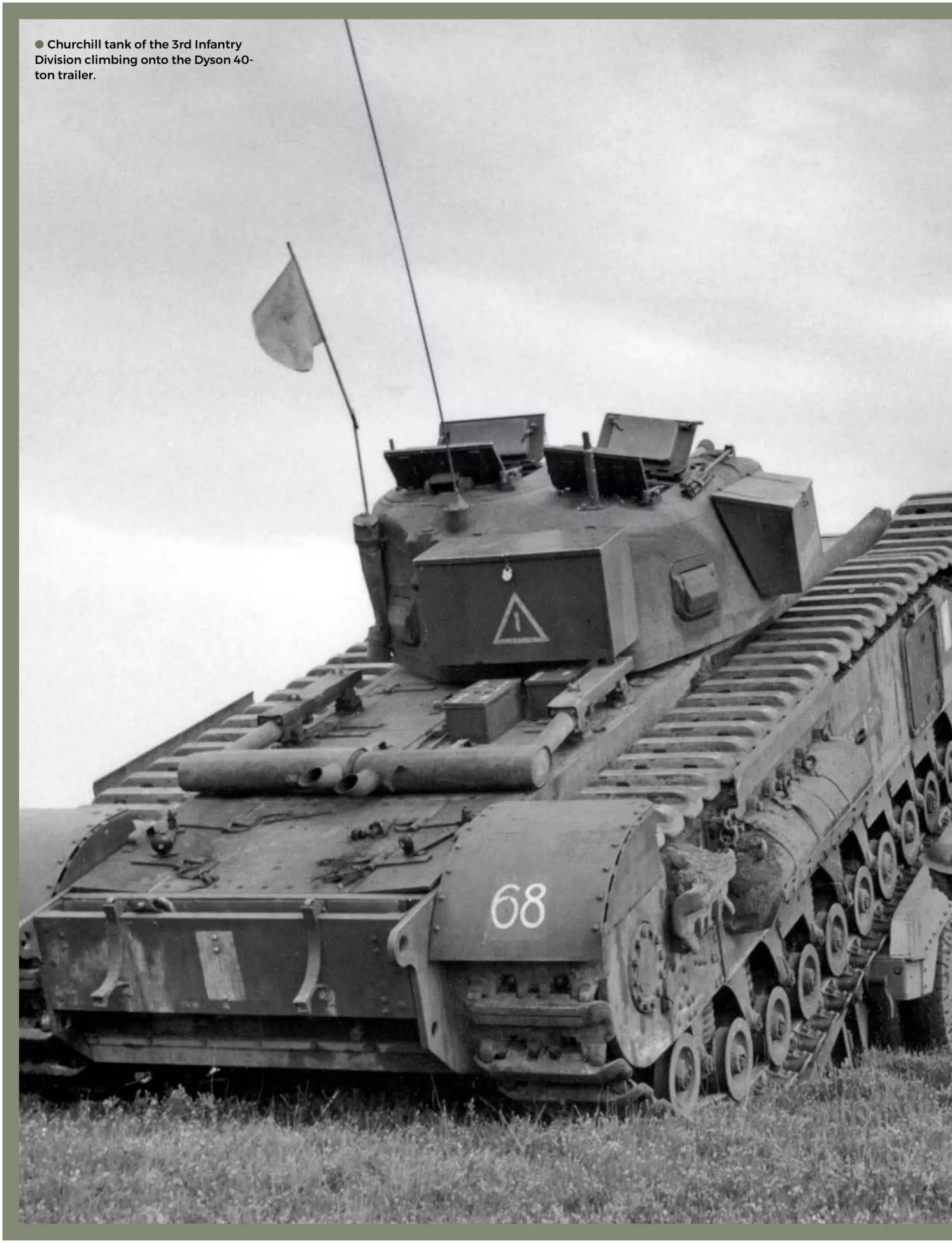
stage, where the road surface was non-existent, tractors needed to be double-headed, and the convoy was able to make little more than five miles (8km) in a day. Other uphill sections required the transporters to close-up tight and to 'boost' or push one another, with occasional sections calling for three, or more, tractors to be coupled together to overcome the terrain.

From D-Day into Germany

From D-Day and throughout the entire period of hostilities in Western Europe, Number 2 Tank Transporter Column RASC operated under the direct control of the British Second Army. Number 65 Canadian Company was also temporarily under the same command. The normal establishment included Numbers 15, 451 and 545 Tank Transporter Companies, each with three platoons of 30 Diamond Ts and 40-ton Dyson or 45-ton Rogers trailers organised into five sections. Each section had six vehicles, plus three vehicles to cover breakdowns, and three more known as 'domestics', and the total manpower of a Tank Transporter Company was ten officers and 409 other ranks.

However, apart from a handful of REME tank-recovery vehicles, the heavier types of tank transporter did not appear in Normandy until some weeks after D-Day, with Number 15 Company landing on D+49, and Number 545 arriving 10 days later. The first major lift came in early August when 180 Shermans of Number 4 Armoured Brigade were moved from Le Beny Bocage to Evrecy, a distance of about 60 miles (100km). On 16 August,

● In the post-war years, British Army vehicles were generally painted in glossy Deep Bronze Green. This Model 981 carries the registration number 31YZ47. Note how elaborate the 'bivvy' has become.



● Churchill tank of the 3rd Infantry Division climbing onto the Dyson 40-ton trailer.

● Unusual loads 2... Buffalo LVT4 being carried on the Dyson 40-ton trailer. These landing vehicles were deployed in the operation to open the port of Antwerp to Allied shipping, as well as during the crossing of the River Rhine in 1945.

● Photographed in Germany, this Model 981 is coupled to a Rogers M9 45-ton trailer carrying a cast-hull M4A1 Sherman medium tank that has lost its left-hand track. Note the rack for a standard pioneer kit that has been bolted to the forward face of the ballast box.

● The US Army described the combination of the M20 tractor and the M9 trailer as the M19 Heavy Tank Transporter. In this case, the tractor is a Model 981.

● The classic M19 Diamond T tank transporter train photographed in North Africa... closed-cab tractor, coupled to a Rogers 45-ton trailer, which is carrying an M3 Grant medium tank.

transporters of 545 Company were used to move 90 Cromwell tanks and self-propelled guns from La Lande to an area south of Caen. By late August every available transporter, a total of 270, was mustered to move armour to Pacy-sur-Eure and within four days these tanks were in Brussels, accompanied by Diamond Ts of 451 Company with Dyson Mk 2 trailers that had been modified for carrying up to 35 tons (35.6 tonne) of ammunition.

The loading of Number 34 Tank Brigade near to St Omer in early October 1944 is worthy of mention. Operating on a disused airfield, the transporters were lined up 20 abreast, enabling 60 Churchills to be loaded almost simultaneously.

Inexorably, the war advanced to the Dutch frontier and during November many of the 'specials' of 79 Armoured Division were brought to the Eindhoven area. And so it continued, with the

● Unusual loads 3... REME modified some 65 Rogers M9 45-ton trailers to allow them to carry the 'landing craft, vehicles, personnel' (LCVP) that was used during the assault phase of the crossing of the River Rhine.

● Unusual loads 4... open-cab Model 981, with all of the canvas in place, towing a Dyson 40-ton trailer onto which has been loaded a German Panzer IV/70(V) 75mm tank destroyer. These tank destroyers saw their first real action during the Ardennes offensive in December 1944.

● Open-cab Rolls-Royce engined tractor coupled to a post-war FV3601 50-ton trailer onto which is loaded an A34 Comet cruiser tank. Although appearing too late in proceedings to really affect the outcome of the war, the Comet was fast, reliable and hard-hitting and was probably the best British tank of WW2, with some remaining in service until the 'sixties.

● Another post-war open-cab/FV3601 combination. This time the load is an A41 Centurion cruiser tank. Note how the 'bivvy' has now evolved to more closely resemble a Nissen hut.

● Literally scores of tractors and trailers belonging to the British 2nd Army. The casual way that the tractors have been left, some with their bonnets or doors open, suggests that this photograph might well have been taken after VE Day.

● Closed-cab Model 980 photographed in the Far East.

● Unusual loads 5... line-up of Diamond T tractors loaded with the Buffalo LVT4 (landing vehicle, tracked) being carried on the Dyson 40-ton trailer.

● Unusual loads 6... this is the Tank Museum's captured Tiger 131, exerting its 57-ton (58 tonne) weight onto the Cranes 65/70-ton trailer that had been developed for the A20 TOG1 and A39 TOG2 tanks. The tilting bed was devised to allow the use of short loading ramps.

invasion armies striking out across the Low Countries and on into Germany. During December 1944 and into January of the following year, the German attack through the Ardennes saw ice and heavy snow hamper movement, with transporter crews credited with making herculean efforts to deliver tanks where they were needed. On one occasion, REME took four days, and had to use four Diamond T tractors and two tracked vehicles to move a pair of Churchill bridge layers from Dinant to Maastricht, a distance of about 80 miles (130km).

During early March 1945, a total of more than 2000 armoured and tracked vehicles of various types, including DD Shermans, Buffalo LVTs (landing vehicle, tracked), and Comet tanks were moved up ready for Operation Plunder, the crossing of the Rhine. Replacement tanks were brought up from Venlo to Xanten on the Rhine, and a lift of Valentines was moved from Xanten to Osnabruck. There were also lifts of LVTs to Bremen and Hamburg using modified trailers. On 28 March, following the successful crossing of the river, a total of 383 transporters and trailers moved 361 Comet and Stuart tanks belonging to 11th Armoured Division from Diest to Wesel.

● A pair of close-coupled Diamond T tractors, belonging to the Fighting Vehicle Proving Establishment (FVPE).

● Unusual loads 8... a pair of FVPE Diamond Ts double-heading the A39 Tortoise heavy assault tank on an 80-ton trailer constructed by Elliott & Garrood of Beccles and derived from the Cranes 65/70-ton unit. The object of the exercise was to test the feasibility of moving a load of this size and weight on German roads.

By May 1945, when the war in Europe ended, Number 2 Tank Transporter Column had made 10,074 armoured vehicle lifts, carrying, for example, Sherman tanks, Sherman flails, Cromwell tanks, Churchill AVREs (armoured vehicles, Royal Engineers), Churchill Crocodiles, self-propelled guns, Terrapin amphibious vehicles, and Buffalo LVTs.

● Unusual loads 7... Pickfords' Diamond T struggling with the 78-ton (79.4 tonne) weight of the A39 Tortoise heavy assault tank on a solid-wheeled twin-dolly trailer that is clearly a little too narrow for the job.

● Unusual loads 9... close-up of the third (of six) prototypes for A39 Tortoise loaded onto the 80-ton trailer. The conclusion of the mobility trials was that the vehicle was simply too large and presented 'severe' problems in transportation.

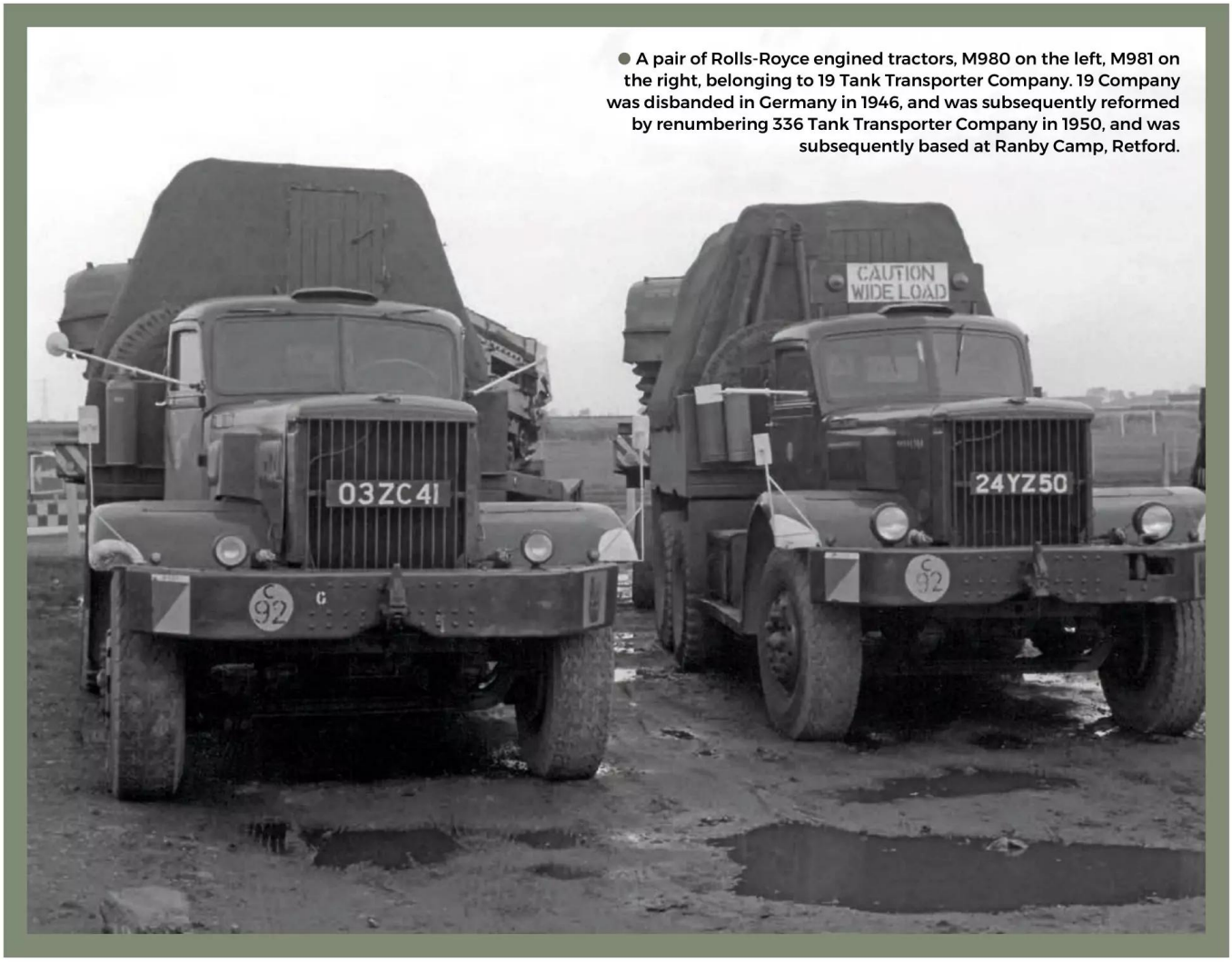
In addition, 23,024 tons (23,443 tonne) of ammunition and stores were delivered. The aggregate loaded mileage was 1,623,825 (2,711,787km).

Post-war service

After the war was over, the Scammell Pioneer tank transporter was quickly disposed of, leaving the Diamond T as the British Army's sole heavy tank transporter, both at home and in Germany with the BAOR (British Army of the Rhine). During the immediate post-war years, many of the wartime Tank Transporter Companies were either amalgamated or closed down altogether, leaving Number 336 Company responsible for movements at home, whilst Numbers 15, 23, 317 (later 617) and 312 (later 612) Companies were based in West Germany.

● Despite the USA prohibiting the sale of vehicles supplied under the Lend-Lease arrangements to Communist countries, this very tidy-looking Model 981 was photographed in Slovenia. The trailer carries an M10 or M36 gun motor carriage.

● Unusual loads 10... this picture shows a pair of M24 Chaffee light tanks that have been modified to look like German Panzers for the film '*Is Paris Burning*'. Markings on the rearmost trailer suggest that the equipment belongs to the French Army.



● A pair of Rolls-Royce engined tractors, M980 on the left, M981 on the right, belonging to 19 Tank Transporter Company. 19 Company was disbanded in Germany in 1946, and was subsequently reformed by renumbering 336 Tank Transporter Company in 1950, and was subsequently based at Ranby Camp, Retford.

One notable operation undertaken in 1948 was the movement of two 78-ton (79.4 tonne) Nuffield Tortoise A39 heavy assault tanks from Britain to Germany, followed by trials on German roads. Each tank was loaded onto a special five-axle 80-ton trailer and was hauled by a pair of Diamond Ts coupled together via a spring-loaded A-frame; the drivers of the two trucks were in contact via a radio telephone system to help with synchronising gear-changes and braking, and a spare truck brought up the rear.

Top speed of the convoy was just 12mph (20km/h). There were problems with the trucks overheating, and, in addition, at least one truck suffered transmission problems.

However, the Diamond T remained perfectly adequate for the remaining WW2 tanks and for the post-war Centurion, but was insufficiently powerful to handle the new breed of heavier tanks that started to appear in the early 'fifties, including, for example, the FV214 Conqueror tank, which weighed 63 tons (64 tonne), and the 56-ton (57-tonne) Chieftain. The Thornycroft Antar started to appear in 1951, displacing Diamond Ts from front-line service... although it was a slow process.

But the Diamond T soldiered on in a domestic role. For example, tractors of Number 19, later number 414, Tank Transporter Squadron were involved in the movement of West German tanks from Pembroke Dock to the major training area at Castlemartin between 1961 and 1964.

Castlemartin was used by West German tank units for long-distance live firing as part of a NATO agreement which allowed the British Army to continue to use the Bergen-Hohne Training Area in Germany.

One of the last of the vehicles used in this exercise now serves as a gate guardian at Bulford Barracks in Wiltshire. Nicknamed 'Old Joe' and carrying the post-war registration 22YZ73, it was in service with Number 19 Tank Transporter Company until September 1964... but the last Diamond T in service with the British Army actually managed to hang on at Stanford Training Area, in Norfolk, until mid-1975.

● The Diamond T tractor has something like 85 grease nipples (zerks) and numerous oil caps, bearings and lubrication points that require attention, either daily, weekly (or every 250 miles, 400km), monthly (1000 miles, 1600km), or semi-annually (600 miles, 1000km).


YZ03

● 'Old Joe', a closed-cab Model 980 tractor, serves as a gate guardian at Bulford Barracks in Wiltshire, having remained in service with 19 Tank Transporter Company until September 1964.

Renumbering

Diamond Ts were renumbered in 1949, with the old 'H' numbers that had been used in the wartime years abandoned in favour of a six-digit system that comprises two alpha characters, two numerals, and two more alphas.

Certain letters were used to indicate vehicles of WW2 origin and the number sequences 20YZ40-33YZ99 and 02ZC81-04ZC48 were assigned to the Diamond T. This totals 1528 tractors, but whether this number of vehicles actually existed is not known... the allocated sequences may have been sufficient to cover all eventualities and there may have been blanks in the numbered series.

The Diamond T and the US Army

During the development period of the truck, it had been stipulated that it also had to be usable by US forces, and, for want of something better, the Diamond T did actually serve with the US Army. It was never warmly embraced, being criticised for its use of 'non-standard' diesel fuel, its lack of a driven front axle, and the fact that there were simply 'too many wheels'... the US Army preferred the Pacific Car & Foundry M26 'Dragon Wagon', a massive six-wheeled chain-driven fifth-wheel tractor used in conjunction with the 45-ton M15 semi-trailer.

Both models of Diamond T were originally classified as 'substitute standard' and described as 'truck trailer, 45 ton, tank transporter, M19'. The tractor was subsequently downgraded to 'limited standard'.

Other military users

Aside from Britain and the USA, WW2 users of the Diamond T included the USSR, who, by 1 April 1944, had received a total of 60 tractors and 30 trailers under the Lend-Lease arrangements, and, by the end of the war had taken delivery of 295 tractors. Tractors were also assigned to 'other countries', including Australia (280 vehicles), Canada (677 vehicles), Czech and Polish 'free forces', South Africa, and Turkey.

During the post-war years, the Diamond T was used extensively by various European armies, including Austria, Belgium, Denmark, France, Italy, the Netherlands, Spain, and West

Germany... even the Irish Defence Force had a lone example! Supplies generally came from British or American surplus stocks, in the latter case, often as part of the Mutual Defense Assistance Program (MDAP) to provide military support to European members of NATO; the Dutch vehicles, notably, came from Canada. Elsewhere, the vehicle saw service with Australia, South Africa, and Switzerland, and Israel, who managed to keep theirs in service well into the 'seventies.

And, despite a post-war ban on the sale of US-built Lend-Lease trucks to Communist countries, unaccountably, a lone Model 981 seems to have found itself serving with the Yugoslavian Army in Slovenia.

FACTS & FIGURES - TYPICAL DIAMOND T LOADS

Vehicle		Description	Date into service	Notes
WW2 gun tanks				
Churchill	A22	infantry tank; 75mm and 95mm gun	1941	
Comet	A34	cruiser tank; 77mm gun	1944	
Cromwell	A27M	cruiser tank; 75mm gun	1944	
Crusader	A15	cruiser tank; 2- and 6-pounder gun	1941	
Grant/Lee	M3	medium gun tank; 75mm gun	1942	
Matilda II	A12	infantry tank; 2-pounder gun	1937	
Sherman	M4	medium gun tank; 75mm and 76mm gun	1942	
Sherman Firefly	M4	medium gun tank; 17-pounder gun	1944	
Stuart	M3, M5	light tank; 37mm gun	1941	
Tortoise	A39	heavy assault tank; 32-pounder gun	1944	trials only
Valentine	-	infantry tank; 2- and 6-pounder, and 75mm gun	1940	
Post-war gun tanks				
Caernarvon	FV221	medium gun tank; 17-pounder gun	1950	trials only
Centurion	FV4000	main battle tank; 17- and 20-pounder, and 105mm gun	1945	
Charioteer	FV4101	tank destroyer; 20-pounder gun	1952	
Conway	FV4004	tank destroyer; 120mm gun	1950	trials only
Engineer tanks				
Centurion ARK	FV4016	armoured ramp carrier	1963	
Centurion ARV	FV4006	armoured recovery vehicle	1956	
Centurion AVRE	FV4003	armoured engineers' vehicle	1963	
Centurion BARV	FV4018	beach armoured recovery vehicle	1960	
Centurion bridge layer	FV4002	armoured vehicle launched bridge	1963	
Churchill ARK Mk 2	-	armoured ramp carrier	1944	
Churchill AVRE	FV3903	armoured engineers' vehicle	1954	
Churchill bridge layer	-	armoured vehicle launched bridge	1942	
Churchill Crab	FV3902	mine clearance flail	1956	
Sherman BARV	-	beach armoured recovery vehicle	1944	
Artillery				
Archer	-	tank destroyer; 17-pounder gun	1944	
M10	-	self-propelled gun; 3in gun	1942	
Sexton	-	self-propelled gun; 25-pounder gun	1943	
Other vehicles				
Alligator LVT	-	amphibious landing craft, tracked	1941	modified trailer
Buffalo LVT	-	amphibious landing craft, tracked	1941	modified trailer
Caterpillar D8	-	crawler tractor	1935	
Higgins boat LVCP	-	amphibious landing craft, vehicles, personnel	1942	modified trailer
High-speed tractor	M6	high-speed artillery tractor	1944	
Terrapin	-	amphibious vehicle	1943	

A DOUBLE DIAMOND WORKS WONDERS

In the post-war years, the Diamond T finds itself challenged by new roles

Long before the first military-vehicle enthusiast woke up with the idea of hunting down a Diamond T for preservation, there were those who appreciated these rugged trucks for what they could actually do on the road. Surplus Diamond Ts started to appear for sale as soon as the war ended. Most went up for sale at the government's Ordnance Storage and Disposal Depot at Ruddington, whilst those vehicles that had formerly served with the British Army of the Rhine (BAOR) were disposed of in West Germany. Even given that some were, shall we say, 'well worn', here, surely, was the most truck you could buy for the least money, with spare parts readily available... at least for a while.

The truth is that the Diamond T was designed for pulling awkward and heavy loads on a drawbar trailer. It was perfect for heavy haulage, and if the load happened to exceed the capacity of one tractor, it was possible to run two, three, or even four tractors coupled together. And who could forget the sight of four coupled Diamond Ts, with a fifth bringing up the rear, as Pickfords struggled to move the heaviest load transported by road in Britain... a massive steel casting *en-route* to Liverpool Docks.

● At the time when this photograph was taken, Pickfords claimed that this massive casting, weighing 178 tons (181 tonne), was the heaviest load moved on British roads. Wynns might have disagreed but, nevertheless, it required four tractors pulling and one pushing.

● A pair of Wynns tractors, parked-up overnight in a snowy layby. The company bought their first pair of Diamond Ts in May 1947 and eventually operated a fleet of 30 of these vehicles.

Or, for that matter, the sight and sound of a Cummins-powered Wynn's tractor bringing machinery to the steelworks at Llanwern.

Colnbrook-based company Rotinoff even reworked a number of surplus Diamond Ts for sale to the heavy-haulage industry, fitting the more modern Rolls-Royce C6 diesel engine. One of these trucks was trialled at FVRDE, but the Ministry of Supply had other plans and there were no purchases. The company subsequently produced a pair of strongly Diamond T flavoured tractors called the Atlantic and the Super Atlantic, available with either Rolls-Royce or AEC engines. A number of these tractors was purchased by the Swiss Army for tank-transporter duties, and the rights to manufacture the vehicles eventually passed to Atkinson, although no further examples were produced.

Heavy haulage

The British Army started to dispose of surplus Diamond Ts almost as soon as the war was over, and, the type proved a popular choice, helping to establish a number of heavy-haulage and heavy-recovery operators across the country. Sales picked-up in the mid-fifties as

the Army started to take delivery of increasing numbers of Thornycroft Antars, eventually resulting in some Rolls-Royce engined tractors passing into private hands.

For heavy haulage, the speed was never an issue, although visibility over that long bonnet must have made close manoeuvring a bit tricky.

Robert Wynn & Sons are probably best known for their heavily rebuilt Pacific M26 'Dragon Wagons', but, during the war, Percy (HP) Wynn had been mightily impressed when he witnessed a Diamond T locking up all six wheels whilst braking, leaving rubber tracks along the road. This was a feat way beyond most of the heavy trucks available in Britain, and 'HP' resolved that one day Wynns would operate some of these tractors.

The company bought the first of an eventual 30 Diamond Ts, of mixed 980 and 981 heritage, in 1947, with the last one coming as late as 1964. Over the years, many were rebuilt,

● Pickfords Model 980 (fleet number 4051) was supplied new to the company in June 1942 and remained on strength until 1955. Here it is seen coupled to a solid-tyred trailer, with a second tractor at the rear.

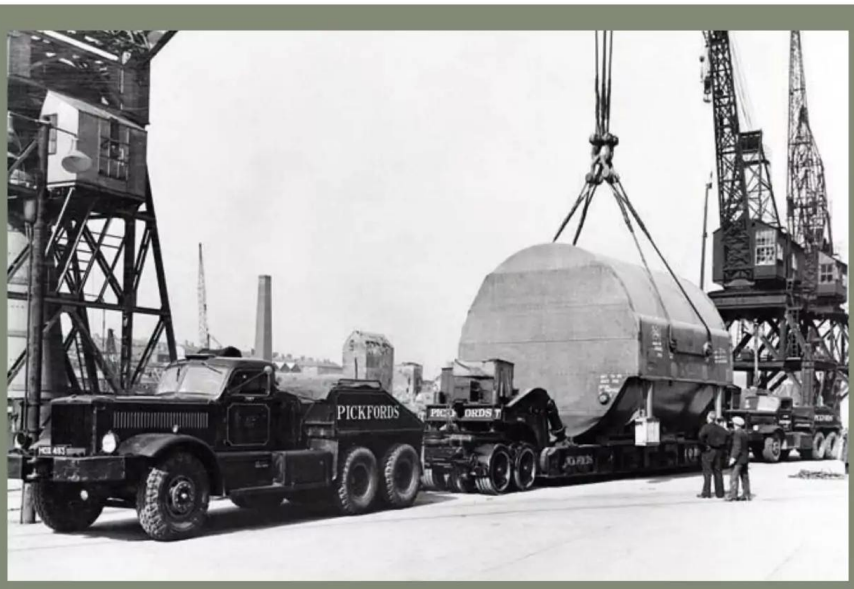
● Colnbrook-based company Rotinoff Motors reworked a number of surplus Diamond Ts for the heavy-haulage industry, fitting the Rolls-Royce C6 diesel engine. The company subsequently produced a pair of Diamond T flavoured tractors called the Atlantic and the Super Atlantic, ten of which were sold to the Swiss Army for tank transporter duties.

with attractive new cabs by Nash & Morgan or, somewhat less attractively, by the Wynn's workshops. More than a handful were re-engined, either using a Meadows 6DC.970 or, latterly, a Cummins unit. Two were converted to fifth-wheel configuration, and two were eventually cut up to build a pair of steerable bogies.

A pair of Diamond Ts, operating in tandem, was easily able to shift a load of 130 tons, or more, and, between them these trucks clocked-up some 25 years of service. More than one has survived into preservation, restored, not in the Khaki Green or Olive Drab of the British or US Armies, but in the familiar Wynns' scarlet and yellow livery.

● Wynns again, with tractor 184, acquired in 1954, hauling a Marshall welded pressure vessel through narrow streets. The state of the ballast box doesn't do the company any favours!

● Photographed in Luton in the early 'fifties, Wynns Diamond T number 160, which was one of a pair of tractors acquired by the company in 1947, hauls a 65-ton (66.2 tonne) English Electric transformer.



● A pair of Pickfords tractors coupled to either end of a Cranes solid-tyred trailer which is being loaded with a massive stator that is bound for Toronto. Note how the rear end of the ballast box has been cut away, on both tractors, to improve rearward visibility.

● Wynns number 262 was acquired in April 1958 and, in common with four other tractors, was fitted with a wider, more luxurious cab by Nash & Morgan of Lydney. Weighing 160 tons (163 tonne), the load is a gantry crane, manufactured by Forsters, and destined for Bradwell Nuclear Power Station.

● Resplendent in the company's distinctive white-lined dark-blue livery, Pickfords tractor 4360, hauls a massive casting out of the English Steel foundry at Sheffield; a pusher truck brings up the rear. The load, which weighed 245 tons (250 tonne) with the trailer, is *en-route* to Liverpool Docks.

Their great rivals, Pickfords, were equally enthusiastic about what these trucks could do. Pickfords had actually got their hands on their first two Diamond T Model 980s in June of 1942. Registered FYV 740 and FYV 741, these trucks came straight from the Ministry of Supply in order to help Pickfords to meet their commitments to the Ministry of War Transport. By 1951, Pickfords had acquired a total of 12 trucks, some by acquisition of other companies, but at least one further example was brand new, supplied by the Isleworth-based Diamond T Motors Limited. They were always immaculately turned out in deep blue with white lining, and became a common sight until well into the early 'sixties.

At least some of Pickfords' Diamond Ts could be identified by the curious canvas 'cab' that was nestled into the

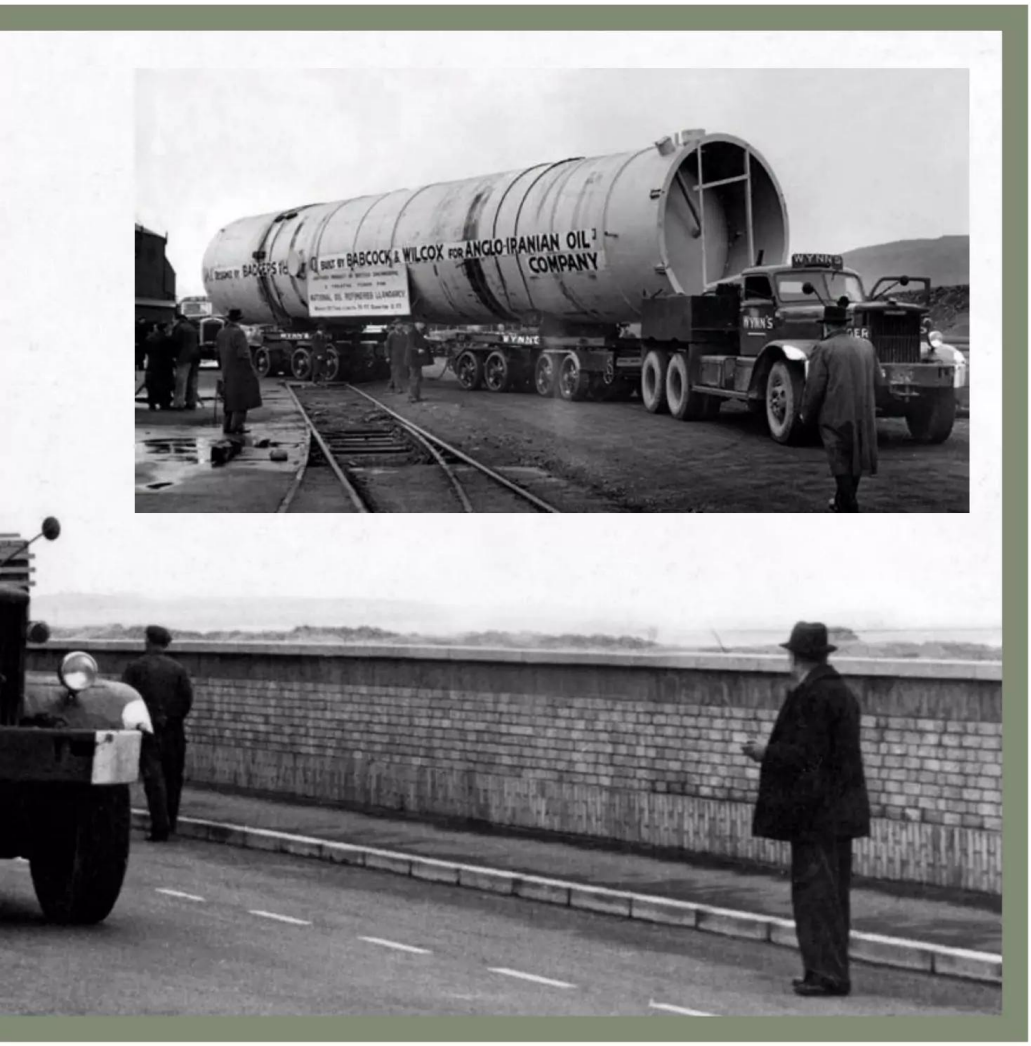
space between the ballast box and the cab proper. By putting a man in what would normally be the driving position, but high up with a view over the roof, it was easier to manoeuvre the left-hand drive tractors. Some had the ballast boxes cut away at the rear, supposedly also to improve visibility.

Pickfords were always keen on setting records, claiming that Diamond Ts had been used to move 'the heaviest load transported by road in Great Britain', a 185-ton (188 tonne) casting from the English Steel Corporation at Sheffield to the Liverpool Docks. The combined weight of the trailer and load was 245 tons (250 tonne), and, on some sections of the route, as many as five Diamond Ts were employed, configured as four pulling and one pushing. Some years later, Pickfords upped the record when a massive transformer, weighing a gross 355 tons (361 tonne) on its trailer, was moved from Edinburgh to Longannett Power Station in Fife... but by this time, the Diamond Ts had been replaced by the hugely-capable Scammell Constructors and Contractors. And, as with Wynns, there is more than one restored Pickfords' Diamond T making the round of historic vehicle shows.

Other heavy-haulage operators based in Britain and equipped with one or more Diamond Ts included the Sunter Brothers, Harkness Heavy Haulage of Belfast, Elliott Hauliers, Crook & Willington, and the Short Brothers in South Wales, as well as Cadzow Heavy Haulage in Glasgow. Frank Annis of Hayes operated a fleet of three or four Diamond Ts, in which he favoured the Gardner 8LW engine and five-speed Mack gearbox in place of the original, necessitating an even longer bonnet! It was not at all uncommon for a particular Diamond T to be passed from one heavy-haulage operator to another.

Not surprisingly, the Diamond T was equally popular for heavy haulage in other parts of Europe, particularly in France and the Netherlands, where many of the Diamond Ts that had been supplied to the French, Italian and Dutch Armies were beginning to be sold off as surplus.

● Assisted by a 45-ton Scammell drawbar tractor, Pickfords Diamond T Model 980, number 4360, hauls a massive transformer, carried in a girder cradle and supported by a pair of solid-tyred dollies.

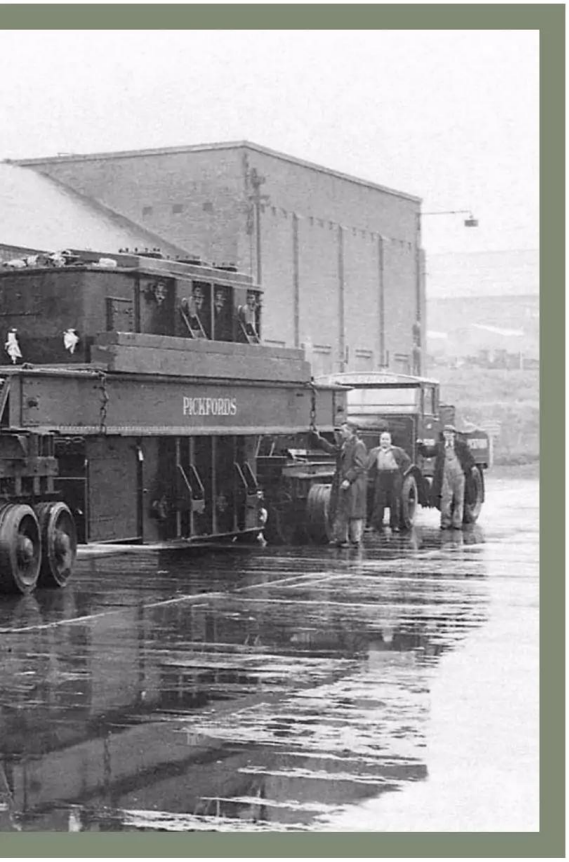


In France, it seemed that there were dozens of them, right through to the 'seventies, many with confusingly similar acronyms. The list would have to include Bourgey-Montreuil; Société Générale de Transports Spéciaux (SGTS); Gary de Faviés; Société des Transports Spéciaux Industriels (STSI); Service Central Automobiles et Transports (SCAT), which was the heavy-haulage arm of Electricité de France; Transports Jonet of Charleroi, who replaced the engines in all of their Diamond Ts with either a Cummins HS600, NH200, or a Deutz air-cooled diesel; and Société des Transports Automobiles des Gennevilliers (STAG).

Dutch operators included Dabekausen of Beek, Wassink of Amsersfoort, Stoof of Breda, and Van Wezel, both of these latter companies later to become better known as Mammoet. And, like Wynns, many of these companies also operated 'Dragon Wagons', alongside the Diamond T.

Diamond Ts were also to be found elsewhere across the world... in India, Italy, Israel, Australia, New Zealand, and, of course, at home in the USA, notably with the New York-based Gerosa Haulage company. Auckland-

● Above Wynns number 160 hauling a treatment tower built by Babcock & Wilcox for the Iranian Oil Company. The equipment, which weighs 130 tons (132 tonne), and is being carried on a pair of solid-tyred dollies, is destined for the UK's oldest refinery at Llandarcy, which opened on 29 June 1922. At that time, the output of the refinery was around 150,000 gallons (680,000 litres) of petrol a day.

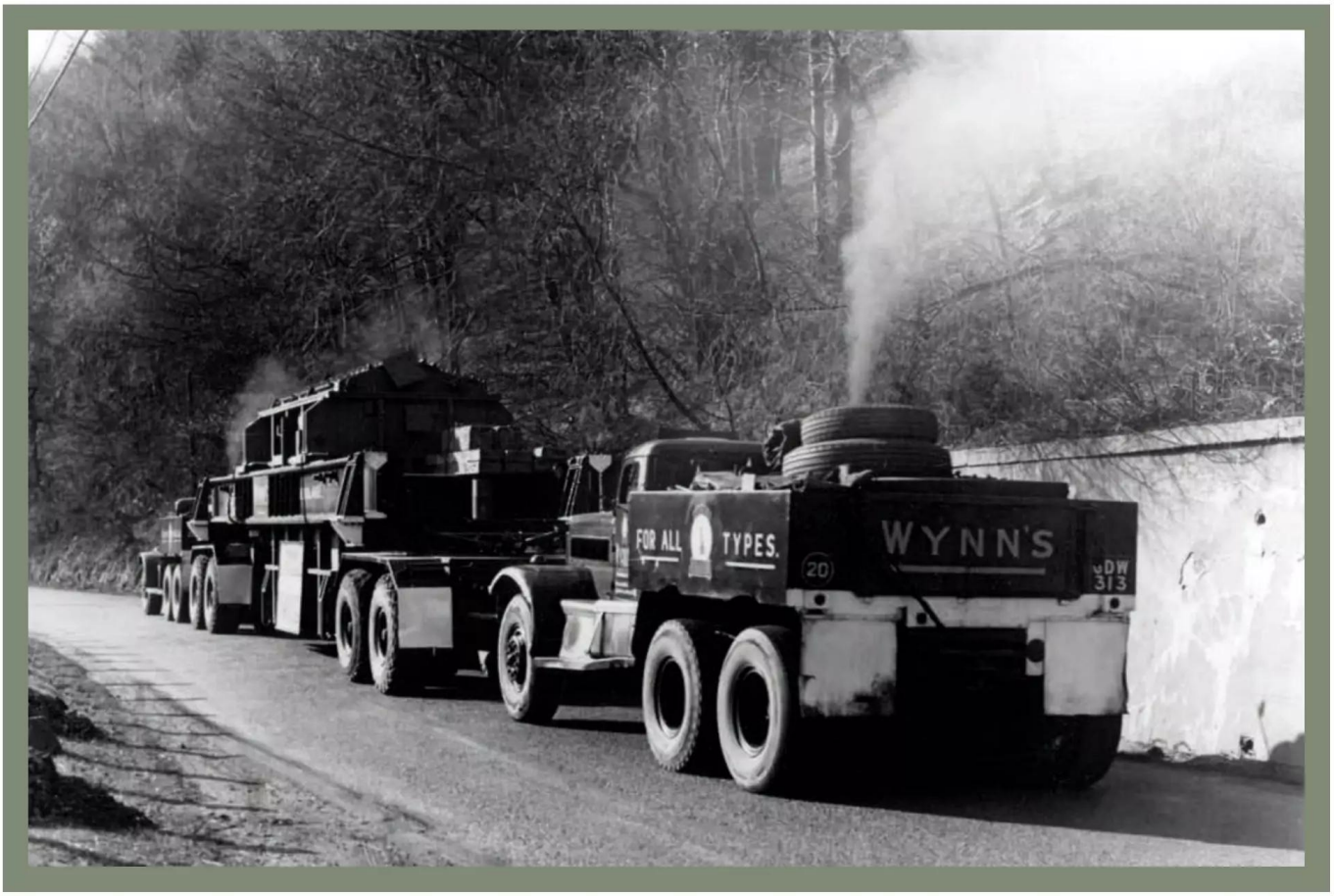


● Wynns Model 980, fleet number 187, photographed in Kilkie Street in the London Borough of Fulham, perhaps *en-route* to one of the nearby power stations at Battersea Reach or Lots Road.

● The crew pause for the obligatory snap for the family album... Pickfords number 4360 coupled to a solid-tyred swan-neck trailer. Note the canvas cab behind the crew, designed to improve visibility to the right of the tractor.

● Starting life as a Model 980, Wynns tractor 266 was acquired in June 1958 and was re-cabbed by Nash & Morgan, and, although the new cab is not unattractive, it would come a distant second to the original. The load announces that it was constructed by Vickers Engineering of Barrow-in-Furness.

● Unfortunately, the message on the side of the frustratingly-sheeted load is not readable so we can't know what it is... but the tractor is Wynns number 160, the first Diamond T to be acquired by the company in May 1947.



● You can almost hear the roar as these two Diamond Ts hustle their transformer load up an incline along the road between Pontypool and Ystrad Mynach. GDW 313 was acquired in September 1950 and was assigned fleet number 187.

● A pair of Pickfords Diamond Ts, with fleet number 4360 in the lead. The trailer is a double swan-neck design riding on a pair of solid-tyred dollies.

based heavy-haulage outfit, Crook & Willington Carriers had a semi-trailer outfit that was used for moving tracked excavators, and in Australia, one ex-Australian Defence Force Diamond T Model 980 acquired from auction in Darwin, was famously used by Kurt Johannsen to build one of the first road trains, hauling 100 cattle in home-made trailers. Four more trucks soon followed and one has been preserved at the Australian National Road Transport Hall of Fame at Alice Springs.

Recovery conversions

Although the US Army had a Diamond T truck that was equipped as a recovery vehicle – the Model 969 – in 'civvy street' it was also common for the Model 980/981 to be converted to a tow truck or heavy recovery vehicle.

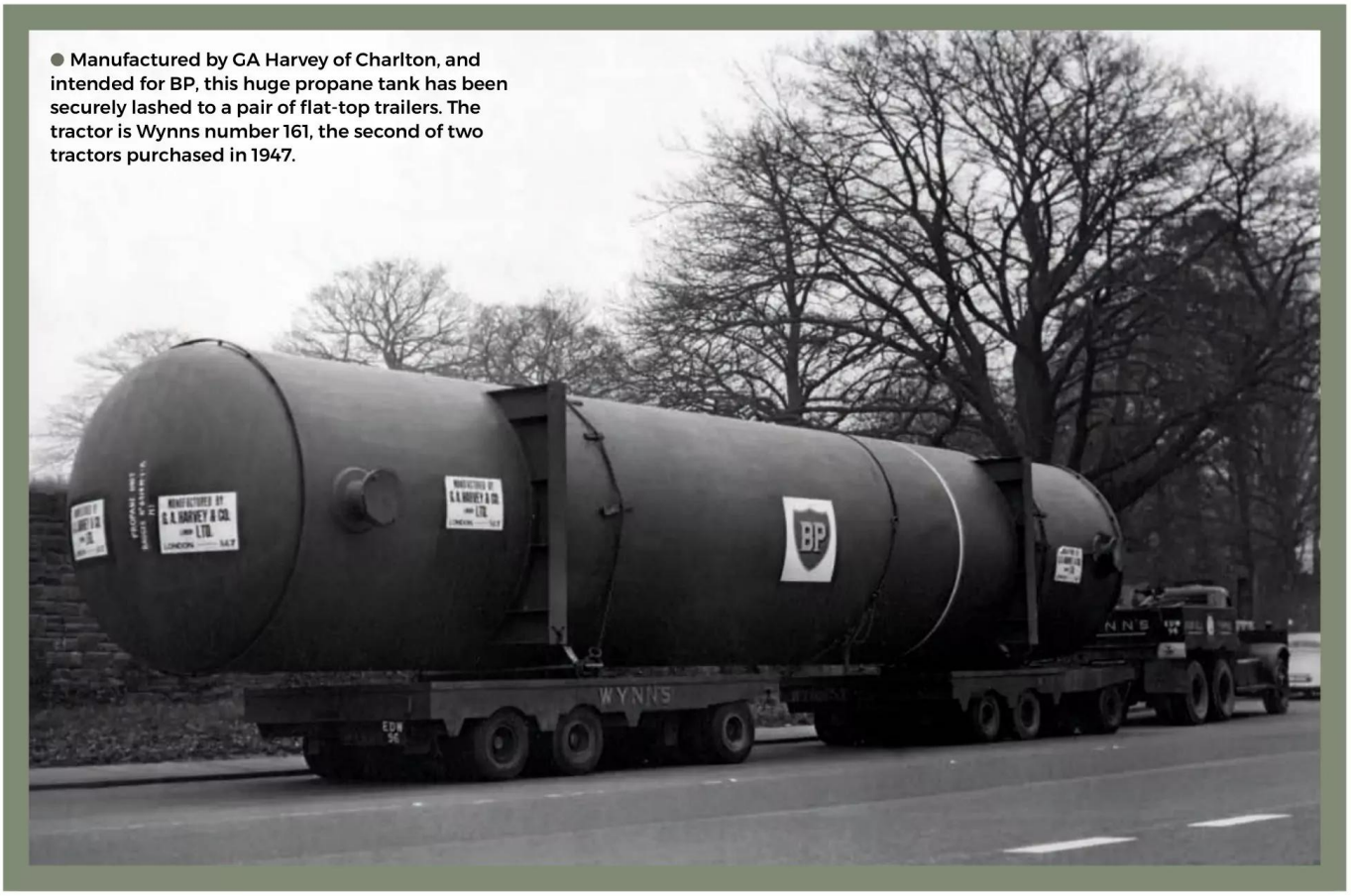
● The bus is forced onto the pavement as Wynns tractor 160 negotiates the English Electric load up and around the bend.

● Surplus Diamond Ts were so popular with commercial operators in France that the magazine '*Revue Technique Automobile*' published a 32-page practical guide to the Models 980 and 981 in its January 1955 issue.

● Three Diamond T tractors (Wynns numbers 247, 160 and 276) were required to get this Ruston Bucyrus RB54 excavator up Barrack Hill, Newport. The lead tractor is a Model 981.

● Seen from a high vantage point, Wynns tractor number 160 hauls a well-loaded solid-tyred trailer carrying an English Electric alternator destined for Fulham Power Station. Customers at Rose's Dining Rooms must have enjoyed the spectacle.

● Nicknamed 'Tiny', Pickfords number 4051 pauses for the photographer. Note the spare wheel inset into the cab step.



● Manufactured by GA Harvey of Charlton, and intended for BP, this huge propane tank has been securely lashed to a pair of flat-top trailers. The tractor is Wynns number 161, the second of two tractors purchased in 1947.

● This trailer looks for all the world as though it has lost its pusher tractor... the real story is that the pusher has been disconnected to ease the passage of the chemical vessel through Swansea's narrow streets.

● The tractor is Wynns number 247, acquired in December 1956... the load is a Parsons generator carried on a Cranes swan-neck trailer.

● The use of solid tyres on this flat-top trailer was intended to reduce the overall height of the load. The tractor, Wynns number 185, is beginning to look a little the worse for wear.

A lack of speed on the road was rarely an issue and, equipped with sometimes home-made lifting equipment, the trucks would spend their lives behind provincial workshops and garages, waiting for the call that said another HGV had come to grief on the motorway.

The Harvey-Frost or Mann Egerton crane was a popular choice, but so too, was the Holmes W45 twin-boom wrecking set 'borrowed' from the Model 969, or the post-war Holmes 750 unit. Other operators favoured the heavy-duty TFL T20 hydraulic lifting gear produced by Tracel Fabrications Limited, later to become a division of Cranes of Dereham, and, later still, a part of Edbro. The George Service Garage in Cricklewood acquired an ex-Wynns Diamond T Model 981 and equipped it with an 8-ton twin-lift Harvey-Frost crane. And, finally, William C Jackson, who was general manager at Chaseside Engineering, based in Hertford, designed an unusual rear hoisting system for installation in the ballast box of the Diamond T, utilising the original winch and fairlead rollers to operate the lifting mechanism, although excessive weight apparently bent the rollers. Nevertheless, several vehicles were converted, with one owned by Cadzow's of Scotland that later reappeared in restored military guise.

● Wynns tractor 279, one of the tractors on which the cab was rebuilt by Nash & Morgan, coupled to Cranes-built trailer number 456 and photographed at the Ferranti works loaded with a transformer rated for 305kV, the largest ever supplied to the CEGB. The trailer was constructed from the frame of trailer 666 fitted with a pair of 16-wheel bogies.

● Photographed in 1951, Wynns tractor number 186 carries a pair of 93-ton (94.7 tonne) castings manufactured by Davy United, and destined for the Steel Company of Wales.

● Wynns tractor 199, originally a Model 980, coupled to a pneumatic-tyred low-loader trailer bearing an electric locomotive constructed by British Thomson Houston of Rugby.

● Photographed at English Steel's River Don works, Wynns tractors 7017 and 4360, coupled to a 200-ton Cranes trailer on which has been loaded a 185-ton (18.84 tonne) casting. A third tractor (6020) brings up the rear.

● A rather shabby looking Pickfords Model 980 tractor. Note the cut-away at the rear of the ballast box and the tubular structure that supports the canvas cab which can just be seen behind the roof vent.

● Heavy recovery-vehicle conversion, based on a Model 980. The work was carried out by LW Vass for British Road Services using TFL lift gear.

● Wynns constructed a heavy recovery vehicle using tractor number 266. The cab was rebuilt in Wynns own workshops and lifting equipment was installed in the ballast box. The vehicle, which was acquired in 1958, has apparently survived into preservation.

● Photographed by Bahrnfrend, at the Australian Road Transport Hall of Fame, this Model 980 was modified by Kurt Johannsen to create one of the first road trains, hauling 100 cattle in home-made trailers.

● ABOVE & LEFT William C Jackson, the general manager at Chaseside Engineering, designed this rear hoisting system for installation in the ballast box of the Diamond T. The original winch and fairlead rollers were retained to operate the lifting mechanism... but excessive weight, apparently, tended to bend the rollers.

Special conversions

Whilst nothing at all to do with the recovery role, it's also worth recording that, in Belgium, civil engineering contractors Société Générale de Travaux (SOGETRA) ran a fleet of Diamond Ts equipped with concrete mixing drums and dump bodies. And the prize for the most inventive Diamond T conversion must surely go to Ten Cate, based in Almelo, Holland. In 1949, the company used a Diamond T Model 980 as the basis for a very stylish 72 foot (22m) long living wagon and trailer for international haulier Walder Waalte.

Fairgrounds

The Diamond T was also perfect for fairground amusement ride operators. A generator set could be mounted in the ballast box, and the truck was equally at home coupled to a pair of trailers. As with a recovery-vehicle conversion, speed on the road was more-or-less unimportant and, maybe the lack of front-wheel drive may occasionally have been a drawback, but the Model 981 could use the winch for self-recovery if the going became too rough.

Charles Thurston's Norwich-based 'Joy Amusements' purchased four Diamond T 980 tractors in 1946, whilst relatives, including John Whyatt and John Thurston, both also operating under the name 'Joy Amusements', also operated Diamond Ts. Other Diamond T operators included Deakin & Sons; Harris's 'Old Time Amusements'; Cook's Amusements; Rose Brothers Amusements, whose tractor appeared briefly in the movie '*The Woman for Joe*' in 1955; and J Rowland & Sons. In the Netherlands, Kommerson snapped up a surplus Diamond T as far back as 1946.

Sadly, you won't find a Diamond T on the fairground circuit these days... but, if you chose to operate such a machine, you could probably make more money by charging the punters to sit in the cab!

● All the fun of the fair. Operating under the name 'Joy Amusements', Charles Thurston was just one of many fairground proprietors who chose a military-surplus Diamond T to move the ride from one location to another, and to generate the necessary power to keep it running.

A NEW LEASE OF LIFE

The Diamond T in preservation

Owning a restored Diamond T buys you an exclusive position in the military vehicle world... even if, at the same time, it will inevitably put a strain on your personal relationships! It is said that there are only around 45-50 Diamond T Model 980/981 trucks remaining in Britain, not all of them restored and certainly, not all of them restored as military. There are more elsewhere in the world, including France, Belgium, the Netherlands, Australia and the USA... but, make no mistake, it is a rare beast!

● Nicely restored Model 981, marked as belonging to an Ordnance Company of the US 4th Armored Division, 126th Ordnance Maintenance Battalion. There are elements of both the British and US Armies about this tractor... but, it is no less impressive for being photographed from behind!

So, if you think you might like to join the ranks of Diamond T owners, the first question is how much will you have to pay, and what will your budget buy you? Well, they don't come up for sale very often... but, David Doyle's 2005 'US Military Vehicles Field Guide' lists the value of the Diamond T as $1200 as a 'parts' vehicle and up to $18,000 in excellent restored condition. That was 15 years ago and these figures could probably now be doubled.

In 2016, an extraordinarily rusty, but complete, Rolls-Royce engined Model 980, that had latterly been used for heavy-haulage duties, sold for a very modest £2200 at a Cheffins auction, without documentation. And, in Australia, a 1943 closed-cab tractor was dragged out of long-term storage and sold at auction for $16,000. In March 2020, a well-used Model 980, admittedly converted to a wrecker and fitted with a Cummins engine, appeared for sale in '*Classic Truck*' magazine at £7500. Whilst, at the other end of the scale, in 2017, a complete and well-restored open-cabbed Model 981 was sold by RM Sotheby's at Auburn Spring for $33,000, lacking title, but complete with a 45-ton trailer.

If you are looking for one to buy, keep an eye on the magazines produced for enthusiasts of vintage commercials and military vehicles, as well as on websites, such as *www.milweb.net* and *www.mvpa.org/classifieds*. And don't forget the popular commercial-vehicle auction sites.

Driving the beast

It is worth pointing out that, for the period, this was a huge truck, but line one up against the tank transporters

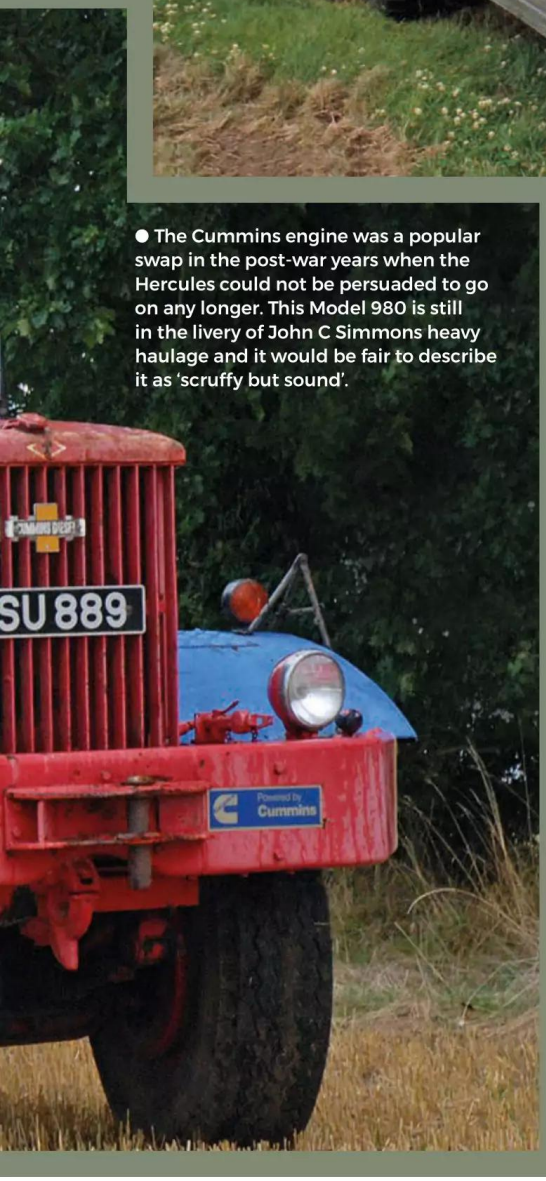
● This much-modified closed-cab Model 980, complete with Cummins engine, appeared for sale in '*Classic Truck*' magazine in early 2020 for £7500. Rather than attempting to return the vehicle to its original condition, it would be kinder to restore it as an example of a civilian recovery vehicle.

that followed – the Thornycroft Antar, Scammell Commander and Oshkosh M1070F – and it looks positively diminutive.

If you fancy a test drive, you'll need to scramble up into the cab, sit behind the massive steering wheel, and make yourself comfortable. And, quite how you do this I'm not sure, but period literature suggests that 'when taking over for the first time [the driver] should get the feel of the vehicle before driving on the road'.

One thing the novice will notice immediately is the forest of control levers, especially on early vehicles where the winch controls are in the cab. Firstly, there is a conventional gear-change lever giving access to four, apparently not very well chosen, forward speeds and one reverse, together with an auxiliary lever that is

● Restored closed-cab Model 981, complete with 45-ton M9 trailer.



● The Cummins engine was a popular swap in the post-war years when the Hercules could not be persuaded to go on any longer. This Model 980 is still in the livery of John C Simmons heavy haulage and it would be fair to describe it as 'scruffy but sound'.

● Open-cab Model 981, complete with the M49 hip ring and machine-gun mount intended for defence against aircraft attack.

● The use of blue and red livery and the fact that this Model 981 has been equipped with a Cummins engine suggests that it might also be the former property of John C Simmons haulage.

● The presence of the tow hitch on the front bumper suggests that this extremely-tired Model 980 survived into the post-war years with the British Army. It was offered for sale, in this condition, by Cheffins in 2016. Note the Harvey-Frost crane in the ballast box.

used to select the three speeds available in the auxiliary gearbox. There is a power take-off lever allowing the use of the winch, together with levers for the winch clutch, painted white, and the winch brake, painted yellow; on later models, the winch brake and clutch are located on the left-hand side of the winch itself. Finally, there is a large trigger-operated handbrake lever, and a small lever on the steering column used to control the trailer brakes.

Look down and note how the clutch and brake pedals are designed for big boots... there's no chance of heeling and toeing here!

The electrical circuits are switched on by means of the circuit lock switch in the centre of the dash. Checks before starting off include the fire-fighting equipment (is it present and correct?), and the fuel, oil and coolant levels. The handbrake must be on, one of the fuel cocks in the battery compartments must

● Open-cab Model 981, photographed by Alf van Beem, in storage at the Royal Military History Museum, Brussels.

● The Diamond T measures-up at 279in (7092mm) from nose to tail. Judging by the cable attached to the front end, and the state of the rear wheels, this tractor and trailer has managed to get itself stuck... front-wheel drive would have helped!

● You couldn't honestly claim that the colour scheme nor, for that matter, the levels of skill required in its application did anything for either beautifying or preserving this Model 981-based recovery vehicle. The plate on the bonnet side suggests that the Hercules engine has been replaced by a Rolls-Royce unit... and note the lack of a cab roof vent.

be set according the tank being used, and the fuel-gauge changeover switch turned to the appropriate position... and don't forget you'll need plenty of diesel if you're planning a trip of any distance. Then move the accelerator to the fully-open position and put your foot on the floor-mounted starter button. The engine should start. Once the engine is running, the circuit lock switch can be turned off: a separate stop switch will cut the flow of fuel to the engine to shut it down.

Wait until the brake pressure shows the correct figure on the gauge and then press the clutch pedal, which is at least air-assisted, select the appropriate gear in the auxiliary box, which will

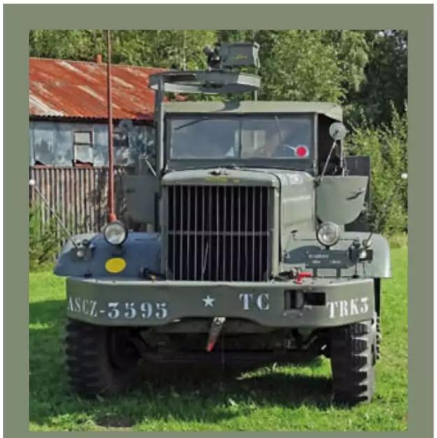
generally be 'overdrive' or 'direct'; the 'low' position is used when hauling a loaded trailer or when engine braking is required on downhill grades. Now, ease the main gearbox into first gear, release the handbrake, and all you have to do now is to peer down that massive bonnet, carefully engage the clutch... and away you go.

On the road, the steering is heavy, but not as heavy as you would expect bearing in mind that there is no power assistance, and the large wheel certainly helps. The compressed air brakes are, as Percy (HP) Wynn discovered back in WW2, surprisingly effective, but you always need your wits about you. It is certainly a big truck, but, unlike later tank transporters, with a

● Open-cab Model 981, with a Sherman M4A1 medium tank on the trailer, photographed by Zandcee at a Royal Netherlands Army Open Day in 2008.

● A second view of the Royal Netherlands Army Diamond T, this time photographed by Zandcee at Oirschot, now clearly showing all of the Sherman tank on the M9 trailer. Armed with the long-barrel 76mm gun, the tank combines the cast hull of the early M4A1, together with the wider tracks and horizontal volute-spring suspension (HVSS) adopted from March 1944.

● Nicknamed 'T Time', this truck is something of a hybrid, though no less interesting for that. It consists of the chassis, cab and front end of a Diamond T Model 980, lacking the ballast box, but fitted with Ernest Holmes 750 or 850 twin-boom wrecker equipment.



● The marking 'ASCZ' (Advance Section Communications Zone) on the front bumper, combined with the red windscreen sticker identify this open-cab Model 981, as having participated in the Red Ball Express operation. Photograph by Ad Meskens.

● In open-cabbed form, the Diamond T loses the attractive proportions of the original, appearing overly long and low, and yet it appears both squat and purposeful when viewed from an oblique rear angle, like this.

maximum width of 100in (2540mm) is not 'legally' over-sized and can be driven without escort or warning signs... though you might want to warn other traffic of what is coming. Nevertheless, driving a vehicle as large and slow as the Diamond T, is not an exercise to be undertaken lightly. If you are seriously planning to drive the beast on the public highway, consider whether it might be sensible to first of all undertake some commercial vehicle driver training to improve your spatial awareness and manoeuvring skill. Bearing in mind that you are unlikely to be overtaking anything other than bicycles, the left-hand driving position often makes life a little easier for the driver.

And, don't even think about the cost of recovery after a breakdown unless you have previously signed up for the RAC's scheme of breakdown cover for vehicles up to 44 tons (45 tonne) in weight.

● Open-cab Model 981 acting as a recovery vehicle for an AEC Matador.

● Big boy's toys... open-cab Model 981, with M9 trailer, carrying a Sherman. Sheer delight, although, driving a Diamond T with the cab canvas in place must be a bit like piloting a large tent.

● Royal Netherlands Army Open Day again, this time without the trailer or the Sherman. The stencilling on the windscreen glass reminds the driver of the truck's maximum speed. Photograph by Alf van Beem.

● Closed-cab Model 980, nicely finished, but in a rather odd shade of green.

Diamond T 981 Very good Rolls diesel soft cab over fitted with Ford A series cab, drives well £1,295. Tel 01625 01625 Macclesfield.

Engines

24 American type, comprising: 5 Jeeps, 4 G.M.C., 2 Chevrolet, 1 Novo, 5 Dodge, 2 Diamond T, 1 Continental, 4 Industrial Chrysler, suitable for spares. Inspection invited. £200 lot ... ... (141)

Diamond T 981 Rolls engine, tyres 85% new batteries, plus spares, dry stored, prize winner £8,000. Mobile: 07932 07932, Tel: 01536 01536, Northants.

DIAMOND - T

O. SAMYN
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Diamond T 981 closed cab. Complete chassis-up restoration, immaculate condition, fitted out living quarters, original Hercules engine. This vehicle needs to be viewed to be appreciated. £10,000. Mobile: 07967 07967 ; Tel: 01995 01995. Preston.

Diamond T 981. 1942 hard cab, Hercules DFXE diesel, good runner, drives well, original ballast body, garwood winch. Ex British Army. £4,000. No timewasters. 07971 07971

● Considering how few of these tractors have survived, they come up for sale with surprising regularity... maybe Diamond T ownership is simply two or three steps up the ladder from owning a Jeep!

● Good view of the M49 hip ring and machine-gun mount that was often mounted on US Army open-cabbed tractors.

Models

As you might expect for such a charismatic truck, the Diamond T has been modelled numerous times over the years and this is probably the only way for those enthusiasts who may lack the necessary garage space, and who are also of slender means, to get their hands on one.

The following list includes tank transporter toys, such as the charming, though crude Matchbox model, through accurate kits and models at various scales:

- Accurate Armour, both open and closed cab variants; kit numbers K181, K182, K183, K185; cast resin and etched brass; scale 1:35. Rogers and Cranes trailers also available.
- Artitec Shop; kit number 10.370; resin castings and etched brass; scale 1:87.

● Virtually unmarked open-cab Model 981 with the winch cable poking out from between the fairlead rollers.

● Matchbox Toy number 15... note how the illustration on the box shows what appears to be a Pickfords Diamond T with a cut-away ballast box, whilst the toy is more akin to a military Model 980.

● Certainly a mite too glossy but, nevertheless, a nice 1:76 scale representation of Wynns number 187 from Oxford Diecasts.

- ASAM Models; more than 20 models available including vehicles in both military and civilian guise; resin castings and etched brass; scale 1:48.
- Corgi Collectables have produced a basic Model 981 which was painted in military sand and in both British and US Army green, and have then used the same basic model to produce trucks in the liveries of Wynns, Pickfords, Annis, Cadzow, Gerosa, Harris's 'Old Time Amusements', Jean Richard's Circus, STAG, Sunters, and possibly others; die-cast metal; scale 1:50.
- ETH Vehicles Arsenal; kit number 111204001; resin castings; scale 1:87.
- King & Country and Sierra Toy Soldier Company; kit number DD318; white metal, polystone, and resin; scale 1:30.
- Langley Models; both open-cab military (kit number G184) and closed-cab Pickfords (G183) variants available; white metal; scale 1:76.
- Masters of Military; 3D printed plastic; scale 1:200.
- Matchbox; number 15A; die-cast metal toy. Be careful not to buy the Rotinoff tractor which was numbered 15B.
- Matchbox; kit number PK-174; injection-moulded plastic; scale 1:76.
- Merit; kit number 63501; injection-moulded plastic and etched brass; scale 1:35.
- Millicast; cast resin; scale 1:76
- Oxford Diecasts, various military and civilian variants, including Pickfords, Thurston's 'Joy Amusements', and Wynns; die-cast metal; scale 1:76.
- Revel; kit number 03226; injection-moulded plastic; scale 1:76.
- Sun Motor Company; kit number 124; white metal kit; scale 1:43.
- Wespe Models; kit number WES 35075; resin castings; scale 1:35.

Although some of these might not still be in production, with a bit of searching on the internet they can probably all be located either used, or as new old stock. Be wary of the Corgi Classics 'hybrid' Diamond T (numbered 55601, 55602, 55604, in various liveries) which is all kinds of wrong... it has the cab and front-end sheet metalwork of the tank transporter, combined with the Holmes twin-boom recovery gear of the US Army's wrecker.

● Corgi Collectables diecast... the box says it's a Model 980, but the bumper says it's a 981.

● Accurate Armour 1:35 model of the post-war Rolls-Royce engined Model 981, complete with canvas 'bivvy' erected over the ballast box. The markings show the vehicle as belonging to Number 19 Tank Transporter Company.

● Matchbox injection-moulded plastic construction kit comprising tractor and trailer at a scale of 1:76.

● Bearing the legend 'Tank Taxi', this is the complete US Army M19 heavy tank transporter outfit as modelled by Accurate Armour at 1:35, consisting of the M20 Diamond T tractor and the Rogers M9 trailer. Dyson trailers are also available.

And finally...

Is it for you? Well, think carefully before committing yourself. This is a big truck that requires a lot of TLC, and is one which you will probably not use on the roads very often. On the other hand, well, it's a Diamond T isn't it and likely to be the only one in your street!

● ...in the post-war army, there's always time for a tea break and a ciggy!

THE FINAL WORD

Diamond T at war... a moment for reflection

'This grim Diamond T in 'war paint' is your truck. It's in the fight for Liberty, for you and all of us. Enormous Diamond T diesel six-wheelers such as this, with gross truck and trailer capacity of nearly a hundred tons, move massive army tanks at high speeds – forward to combat zones or back for repairs.

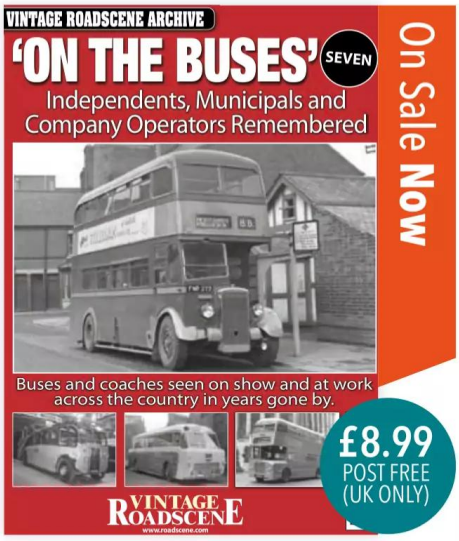
When Victory is won, men who are now battling in far places can tell you of how well these and other types of Diamond T trucks served them.

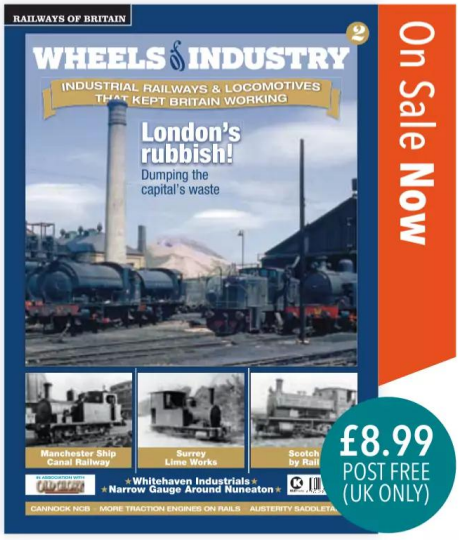
Meanwhile, all your patience and ingenuity and care are called upon. The new trucks that you may need are not to be had. Your veteran Diamond T trucks have got to last – to stay on the job – to clothe and feed and safeguard civilian life and health. That means they've got to be cared for skilfully and systematically.

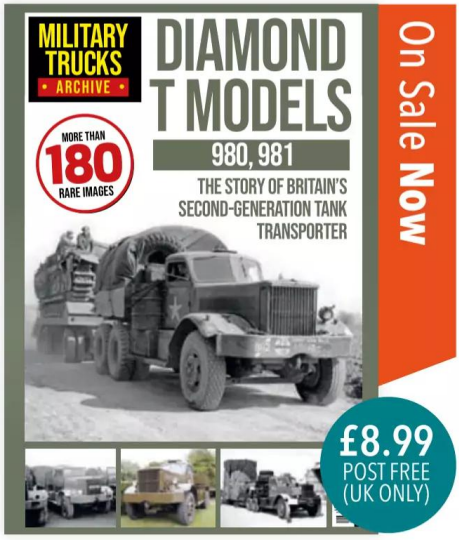
To this end, your Diamond T dealer is ready to give you co-operation that isn't conversation. The Diamond T Life Extension Lubrication and Inspection Service – backed and sealed by the solemn Victory Pledge of Driver, Dealer and Owner – is ready to cover every Diamond T you operate. It's truly 'truck fitness assurance'. It's for the duration. It's a real American answer to a problem that's tough for all of us. And every Diamond T dealer is at your service.'

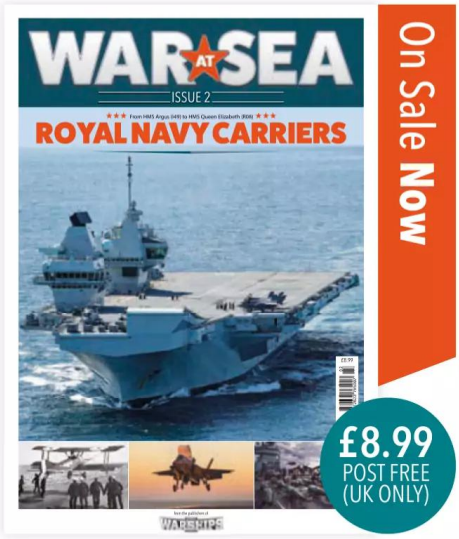
Press advertisement. Diamond T Motor Car Company; appeared in edition of Saturday Evening Post, dated 6 January 1942.

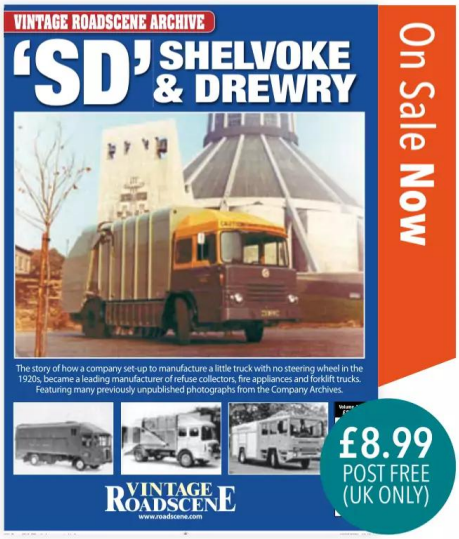
New Bookazines from Kelsey Media











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